

TEKTRONIX®

5B42

DELAYING TIME BASE

INSTRUCTION MANUAL


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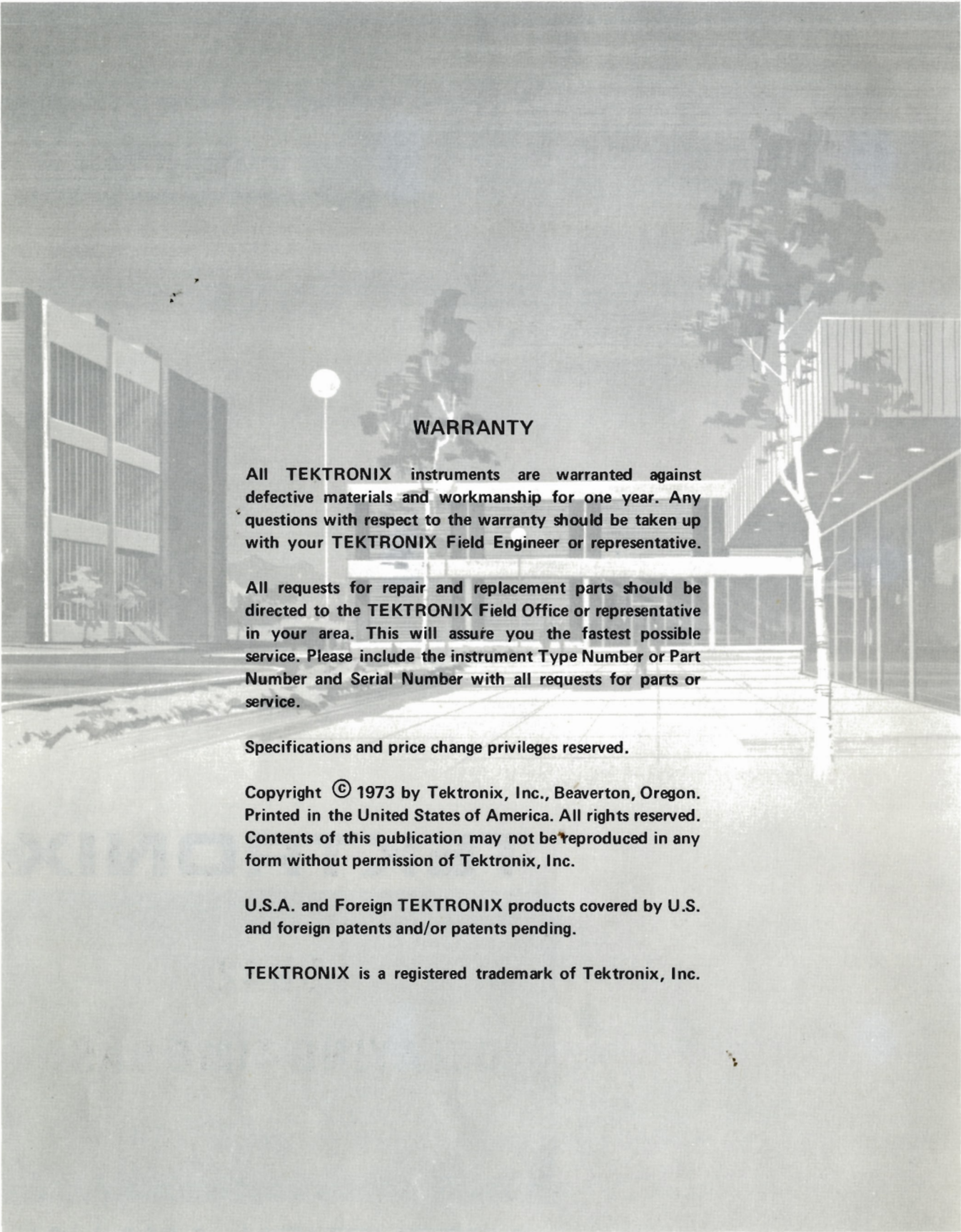
DELAYING TIME BASE

INSTRUCTION MANUAL

Tektronix, Inc.
P.O. Box 500
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OPERATING INSTRUCTIONS

INSTRUMENT DESCRIPTION

The 5B42 Delaying Time Base provides normal and fully triggerable delayed sweeps for the 5400 series oscilloscopes. It features edge-lighted main and delayed SEC/DIV selector switches. When used in a mainframe with readout capabilities, the SEC/DIV information is displayed on the CRT face. All front panel controls are conveniently grouped and

color coded for ease of identification and operation. Pushbuttons select various trigger modes from either vertical plug-in compartment and the various sweep modes. Although designed for use in the right hand or sweep compartment of the oscilloscope, the 5B42 will operate in the vertical compartments to produce vertical sweeps.

PREPARATION FOR USE

Your 5B42 is calibrated and ready for use when received. Fig. 1-1 shows installation-removal procedure. Refer to the Front Panel Controls illustration in the fold-out pages for a complete description of the front panel. Color patterns printed on the front panel help to identify functionally grouped controls. Blue surrounds controls

associated with the display mode, light green with the main trigger, and dark green with the delayed trigger controls. Also, the shades of grey on the TRIG LEVEL controls correspond with the grey on the SEC/DIV switch knobs for easy identification.

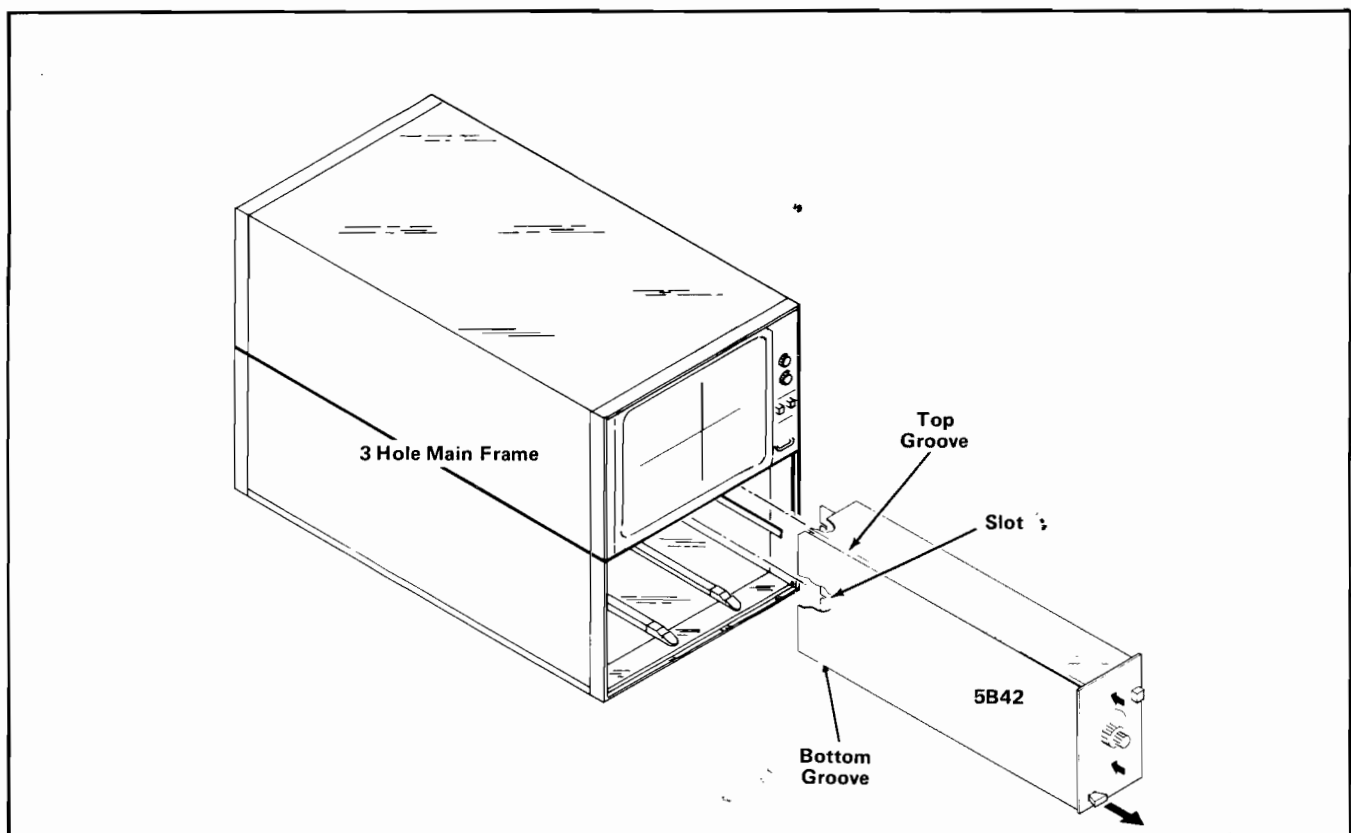


Fig. 1-1. 5B42 Installation-Removal Procedure.

BASIC OPERATION

Triggered Display

With the 5B42 Time Base properly installed in the horizontal plug-in compartment, apply power to the main frame. Connect the CALIBRATOR output on the display module to the vertical plug-in. Adjust the vertical plug-in gain for a two division display. Push the LEFT or RIGHT TRIGGER SOURCE button, depending on which compartment contains the vertical plug-in. Push the MAIN SWEEP button in the MODE column, and the AUTO TRIG button in the light green TRIG SOURCE area. Rotate the position controls for the vertical plug-in and 5B42 until a trace is visible. Adjust the MAIN TRIG LEVEL control until the display stabilizes. Now rotate the MAIN TRIG LEVEL control from stop to stop. Notice that the trace free runs over most of the control rotation. Release the AUTO TRIG button and rotate the MAIN TRIG LEVEL control from stop to stop. Notice that the trace appears only when it is triggered, and disappears over most of the control rotation.

Single Sweep Mode

Obtain a stable display, positioning the sweep so that the start is visible. The sweep is starting on the negative-going portion of the square wave. Push the + SLOPE button. The trace will start on a positive-going waveform. Remove the jumper from the calibrator to the vertical plug-in. Depress the button labeled SINGL SWP. The READY light is now visible. Watch the CRT, and touch the jumper to the vertical plug-in input. If the intensity is high enough, a fast single trace will be visible and the READY light will extinguish. Remove the signal to the vertical, and depress the RESET button. The READY light will be visible again, and the sweep is rearmed. Release the SINGL SWP button and obtain a stable display by pushing the AUTO TRIG button, and adjusting the MAIN TRIG LEVEL control.

Dual Trace Display Switching

The button labeled CHOP in the blue DISPLAY MODE section of the front panel selects the switching mode for dual sweep vertical plug-ins. With the button out, the switching is done in the alternate mode, i.e., one channel is displayed for one full sweep, and then the other channel is displayed. This can be demonstrated by using a dual channel vertical plug-in and slowing the 5B42 sweep speed to about 10 ms/div with the trace free running. Pushing the button in gives the chopped mode.

Use the chopped mode for viewing slower dual-trace displays and the alternate mode for faster displays. Return the vertical plug-in to a single channel display and reconnect the calibrator waveform.

Delayed Sweep

Set the DELAY TIME MULT dial to mid-range. Obtain a triggered display. Push the INTENS SWP button in the blue DISPLAY MODE column. Notice the number illuminated in the outer ring of the SEC/DIV sweep dial. Set the DLY'D SEC/DIV to 1 m and the MAIN SEC/DIV to 5 m. Reduce the INTENSITY control on the display module until a portion of the display is visible as an intensified portion. Rotate the DELAY TIME MULT dial and notice the brightened portion move smoothly across the display. The brightened portion represents the delayed sweep, and occurs in one fifth the time of the main sweep according to the described SEC/DIV switch settings. The delayed sweep speed is independent of the main sweep speed, and may be set to any speed equal to or faster than the main sweep. Press the DLY'D SWP pushbutton in the blue DISPLAY MODE column; the bright portion of the display will spread across the entire CRT. See Fig. 1-2A.

Triggered Delayed Sweep

Press the TRIG AFTER DLY and the INTENS SWP pushbuttons and adjust the DLY'D TRIG LEVEL control for a stable display with an intensified portion. Rotate the DELAY TIME MULT dial and the brightened portion will jump from waveform to waveform. Push the + SLOPE button located in the dark green area above the DELAYED TRIG LEVEL knob. The start of the intensified portion will shift from the negative portion of the waveform to the positive portion. Press the DLY'D SWP pushbutton. The intensified portion of the triggered waveform is now displayed across the entire CRT. Return to the INTENS SWP mode. In this mode the delayed sweep will not start until the main sweep has passed the number of divisions shown on the DELAY TIME MULT dial. The next trigger after this point will start the delayed sweep. One purpose of the triggered mode is to eliminate jitter that may be present in highly magnified displays. Another purpose is to select the trigger starting the delayed sweep. For example, to view a low level signal impressed on a high level signal, trigger the main sweep on the high level signal and the delayed sweep

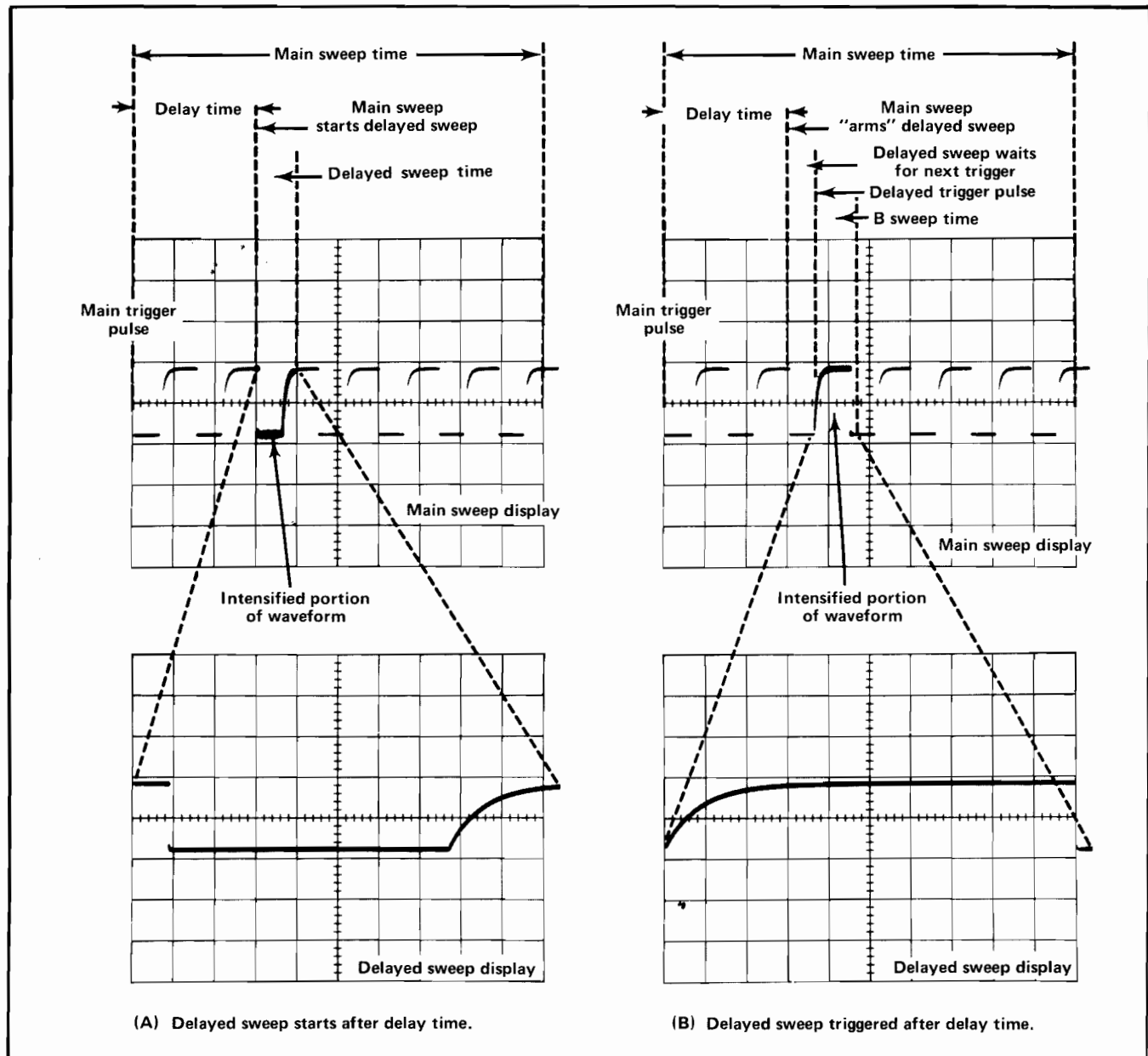


Fig. 1-2. Relationships of Main and Delayed sweeps.

on the low level signal. Select the portion to trigger the delayed sweep in the intensified mode. See Fig. 1-2B.

Press the SWP MAG button and notice the sweep speed increase by an order of magnitude. This is shown on the SEC/DIV dial and the CRT readout.

If the waveform viewed is line-frequency related, push the button labeled LINE in the light green TRIG SOURCE column. The signal activating the trigger circuits in this

mode is taken from the power line. External triggers may be applied to the EXT TRIG connector. Push the button labeled EXT in the light green TRIG SOURCE column.

External Horizontal Amplifier

To use the 5B42 as an amplifier, rotate the MAIN SEC/DIV switch fully CCW to the AMP position. Apply the calibrator waveform to the BNC connector marked EXT HORIZ AMPL. Two dots approximately eight divisions apart are visible. There is no front-panel gain adjustment for the external horizontal amplifier.

SPECIFICATIONS

All references to divisions or VOLTS/DIV refer to major graticule divisions in this manual.

Main Sweep

ACCURACY: (Measured in 5400 series oscilloscope over center 8 graticule divisions. Exclude the first 30 ns and the last 10 div of the magnified sweep):

	+15°C to +35°C		0°C to +50°C	
	Unmag	Mag	Unmag	Mag
1 s/div to 0.5 μ s/div	3%	4%	4%	5.5%
5 s/div and 2 s/div 0.2 μ s/div and 0.1 μ s/div	4%	5%	5%	6.5%
Any two divisions within center 8 divisions	6.5%	6.5%	8%	8%

VARIABLE RANGE: Continuously variable between calibrated sweep rates. Extends sweep rate to at least 12.5 s/div.

TRIGGERING:

Coupling	Vertical Plug-In Series	Freq. Range	Minimum Signal Required	
			Int.	Ext.
DC	5400	DC to 10 MHz	0.4 div	100 mV
		10 MHz to 60 MHz	1.0 div	400 mV
	5100	DC to 2 MHz	0.4 div	
AC		Requirements increase below 50 Hz.		
LF REJ		Requirements increase below 7.5 kHz.		

TRIGGER LEVEL RANGE: $\geq \pm 8$ div.

SINGLE SWEEP: Same requirements as main sweep.

EXTERNAL TRIGGER INPUT:

Maximum input voltage: 350 V DC + peak AC, 350 V P-P AC at ≤ 1 kHz.

Input R and C: 1 M Ω $\pm 2\%$ paralleled by ≈ 20 pF.

Trigger Level Range: $\geq \pm 2.5$ V.

Delayed Sweep

ACCURACY: (Measured in 5400 series oscilloscope over center 8 graticule divisions):

	+15°C to +35°C		0°C to +50°C	
	Unmag	Mag	Unmag	Mag
0.1 s/div to 0.5 μ s/div	3%	4%	4%	5.5%
0.5 s/div and 0.2 s/div; 0.2 μ s/div and 0.1 μ s/div	4%	5%	5%	6.5%
Any two divisions within center 8 divisions	6.5%	6.5%	8%	8%

TRIGGERING:

DC to 10 MHz: 0.4 div.

60 MHz: 1 div.

EXTERNAL HORIZONTAL INPUT:

Deflection Factor: 50 mV/div $\pm 3\%$.

Bandwidth:

DC Coupled: DC to ≥ 2 MHz.

AC Coupled: ≤ 50 Hz to ≥ 2 MHz.

Delaying Sweep Characteristics

DELAY TIME MULTIPLIER RANGE: 0.2 to 10 times the TIME/DIV setting.

INHERENT DELAY TO START OF DELAYED SWEEP: <100 ns.

DIFFERENTIAL TIME MEASUREMENT ACCURACY:

1 μ s/div to 0.5 s/div delay time: $\leq 1\% + 0.2\%$ of full scale.

1 s/div to 5 s/div delay time: $\leq 2\% + 0.2\%$ of full scale.

JITTER: ≤ 1 part in 20,000 of 10 times the main TIME/DIV setting.

THEORY OF OPERATION

Introduction

Refer to the complete schematic diagrams, and the block diagram, located in the pullout pages at the back of this manual, for a complete understanding of the 5B42 theory of operation.

External Horizontal Amplifier

Signals applied to the EXT HORIZ AMPL input, J10, are fed through a divide-by-two attenuator, consisting of R11, R15, and AC compensating capacitor, C15, to the gate of source follower Q20. When S10A is in the AC COUPL position, C11 AC couples the signal to Q20. The circuit DC balance is set by R25 through Q24. In the AMP mode, the signal travels past protective diodes CR30 and VR30 to Q34, an emitter follower. The emitter of Q34 drives the emitter of Q36, operating as an operational amplifier. The feedback path is through VR42, R45, R50, and R52. The latter sets the gain at two. The amplifier is disabled, when the MAIN SEC/DIV switch is not in the AMP position, by raising the common emitters to about +5 V. The output from the amplifier is the junction of VR42 and R45. Positioning in the external mode is accomplished by a section of the main POSITION control connected to the base of Q36 through R49.

External Trigger Channel Switch

The purpose of the trigger switches is to isolate the unwanted trigger source. They also provide gain. The output of Q20 feeds the base of Q60, whose emitter drives Q62 in a grounded-base configuration. LR67, C67, LR73, and C73 serve as noise filters. The output of Q62 drives Q80 as a grounded-base amplifier. The base level of Q80 is set by CR80, R80, R83, and R85. To prevent coupling of the trigger signal through the switch, the emitters of Q60 and Q62 are disconnected from -15 V. The collector of Q62 rises toward +15 V as Q62 is turned off. Diode CR81 conducts, and causes a very low impedance to ground at the output of Q62. CR81 maintains the DC stability of the circuit, and shorts any capacity-coupled signal that may be present on the collector of Q62 to ground. C98 AC-couples the output of either Q80, Q90, or Q230 in the AC-coupled mode. C99 and R280 form a high pass RC combination for rejection of low frequency signals. Q90's base is connected to a secondary of the line transformer. A low level voltage at line frequency is obtained for line triggering. Q60, Q62, Q200, and Q210 are disabled in the line mode by removing the -15 V from their emitters.

Internal Trigger Channel Switching

These switches (Schematic 2) operate in the same manner as the switch described in the preceding paragraph. The trigger signal from the right vertical plug-in is applied to the base of Q100, through pin 4A on the rear interface connector. The left vertical plug-in trigger signal is applied through pin 4B to the base of Q150. The outputs of the right or left trigger switches are applied to the internal trigger channel switch, and then to the main trigger comparator (Schematic 3). CR235 holds the base of Q230 positive when the plug-in is operating in the external amplifier mode to prevent coupling of any trigger signals from either vertical plug-in to the external horizontal amplifier.

Main Trigger Comparator

This circuit selects the voltage level on the waveform where triggering takes place. The triggering signal is applied to the base of Q280. Q280 and Q290 serve as a voltage comparator. The DC level at the base of Q290 is set by R320, the MAIN TRIG LEVEL control. If the voltage at the base of Q280 is higher, current will flow through Q280 and the collector of Q290 will be high. The opposite is true if the base voltage of Q280 is lower, and the collector of Q290 will be low. C285 and R285 improve high frequency response. LR293, C293, LR299, and C299 prevent coupling of switching transients into the voltage supply lines.

Delayed Trigger Comparator

This comparator operates in the same manner as the Main Trigger Comparator. The input to the base of Q370 is selected from either the right or left trigger channel switch. It is not possible to trigger the delayed sweep externally.

Main Trigger Generator

This circuitry uses emitter-coupled logic devices. Significant high levels are approximately 4.2 V, and low levels 3.2 V. Low amplitude analog trigger signals may operate gates U320, U330A, U330B, and U335A. The remainder of the gates operate at digital levels exclusively.

Input to the main trigger generator is pin 7 of U320, an exclusive OR gate. Pushing the + SLOPE TRIG SOURCE button sets a low on pin 9, which allows U320 to operate as a non-inverting amplifier with a gain of five. A positive-

going trigger signal at pin 10 of U320 causes a positive output from pin 14 of U335C which starts the sweep. U335B and C form a latch, which generates the sweep gate. When the sweep ends, the junction of R356 and R357 goes high, setting latch U330C and D so that a high is on pin 14 of U330C. This high resets latch U335B and C. In this state, U335C can not initiate a sweep gate. When the hold-off time passes, the junction of R356 and R357 goes low. A low at pin 6 of U330B, or the next negative-going trigger, causes latch U330C and D to reset, enabling latch U335B and C. The next positive output from U320 initiates the sweep gate by lowering pin 13 of U335C. When negative slope triggering is desired, a high is placed on pin 9 of U320, which allows U320 to operate as an inverting amplifier with a gain of five.

Delayed Trigger Generator

This generator operates, in the triggered mode, in the same manner as the main trigger generator. In the delayed sweep and intensified sweep modes, the delayed sweep starts when the junction of R438 and R440 goes low. The highs placed on pins 14 and 15 of U410, through diodes CR410 and CR411, cause a continuous low at pin 6 of U420B. This causes pin 12 of U425C to go low at the beginning of the delayed pickoff gate. Pin 9 of U425B is held high, causing a continuous low on pin 13 of U425C. Two lows at the inputs of U425C cause a high at pin 14 starting the delayed sweep runup.

Sweep Control

U450, with additional external circuitry, controls the main sweep generator. In the automatic triggering mode, pin 19 of U450 is connected to ground. If pin 1 of U450 receives no trigger pulses from the main trigger generator for a period of time determined by R495 and C495, circuitry in U450 outputs a negative-going square wave. This negative-going square wave from pin 3 of U450, drives the base of Q480 negative. The collector goes positive and stays positive for the duration of the sweep. A positive pulse at the emitter of Q480, from the trigger switches, also causes the collector of Q480 to go positive, starting the sweep. This positive pulse is also applied to the unblanking circuitry, in the plug-in and the mainframe, to unblank the CRT during the sweep.

The sweep ramp is fed to the base of Q470, which forms a comparator with Q460. Q470 is conducting and Q460 is off. As the ramp rises, current flow in Q470 is reduced until CR460 is forward biased, and Q460 comes sharply into conduction. This positive pulse at pin 16 of U450 causes the auto gate (from pin 3) to go positive, terminating the sweep through Q480. If the unit is operating in the triggered mode, a positive gate appears at pin 17, lowering the sweep gate via the main trigger generator and Q480, terminating the sweep.

As the sweep ramp decays toward ground, Q460 and Q470 switch, so that pin 16 of U450 again goes low. No negative pulse can appear at pin 3 to start the next sweep. Pin 17 remains high, locking out the main trigger generator until holdoff time is completed. This time is determined by C500, R500, C501 and C502. These components are switched according to sweep rates, as shown in the switch details. Holdoff is necessary to allow all sweep-generating circuits to discharge before the start of the next sweep.

When the external horizontal amplifier mode is used, pin 18 of U450 is connected through CR455 to +5 V. This disables the sweep until the switch is opened.

In the single sweep mode, the automatic trigger capability is removed by ungrounding pin 19 of U450. Pin 12 is connected to +5 V. The next trigger operates the sweep in the normal manner. The gate at pin 17, however, remains high, locking out further triggers until pin 11 of U450 is grounded and pin 15 is connected to +5 V through the spring-loaded RESET button. VR490 and CR490 provide -5 V for U450.

Main Sweep Generator

The sweep ramp is generated in U550. The ramp is fed to the horizontal amplifiers and the sweep control from pin 8. Timing capacitors C_t and timing resistors R_t determine the rate of rise. The DELAY TIME MULT potentiometer controls one half of a comparator in U550. The other half is connected internally to the ramp. When the ramp voltage reaches the voltage on the center arm of the delay time potentiometer, pin 4 of U550 goes high, driving the collector of Q570 low. This low gate starts the delayed sweep through the delayed trigger generator. A low at the collector of Q574 deactivates the delayed sweep by locking pin 4 of U550 in the low state. This occurs only when operating in the main sweep mode. When operating in other than the main sweep mode, pin 5 of U550 is high during main sweep time, allowing the delayed sweep to start at the selected time. Q540 aids in reducing sweep jitter, and R545 compensates for leakage current in U550.

Delayed Sweep Generator,

The delayed sweep generator integrated circuit is identical to the one used in the main sweep. Several external connections are changed to suit the delayed sweep operating mode. Pin 5 of U600 is always connected to +5 V, enabling the generator whenever the plug-in has power applied. When the positive sweep gate from the delayed trigger generator is applied to pin 1, the sweep starts, and the CRT is unblanked through the emitter of Q690. The sweep runs up until the delayed trigger generator receives a positive-going pulse from Q570. The delayed sweep gate, at pin 1 of U600, goes negative, the CRT is blanked and the sweep decays. If the sweep time of the delayed sweep is

much faster than the main sweep, the delayed sweep ramp will reach 10 V, its limit, before the gate at pin 1 returns the ramp to ground. The voltage at pin 6 is fixed at 10 V. As the ramp rises past 10 V (at the end of the sweep) pin 4 goes high, blanking the CRT through Q690. Under this condition, the CRT is blanked through the base of Q690 from pin 4 of U600, and the delayed sweep remains high until turned off by the delayed sweep gate.

Output Buffer

Main or delayed sweep ramps are applied to the base of Q650. Q650 and Q670 comprise an emitter-coupled paraphase buffer for the sweep ramp. In the magnified mode, emitter degeneration is reduced, resulting in an increase in gain by ten times. Clamping limits the peak-to-peak excursion at the collector of Q650 to about 1.2 V. Q665 is a constant current source. Sweep positioning is accomplished by varying current balance in the amplifier through the base of Q670.

When the plug-in is operated in the external amplifier mode, the base of Q680 is connected through R682 to +5 V. This saturates Q680 and eliminates the effect of the position control on the base of Q670. Positioning is accomplished in the external horizontal amplifier as described previously. The base of Q720 is made more positive through CR685 to unblank the CRT. Output from the external horizontal amplifier is connected to R672, and R672 is disconnected from ground.

The main sweep gate is applied at the base of Q730. CR732 conducts only when the emitter of Q730 goes negative at the end of the main sweep gate. This negative-going pulse activates circuitry in the main frame to alternate traces in vertical plug-ins. When the CHOP pushbutton is in, pins 18A and 20A on the interface connector are connected together, causing the vertical plug-ins to operate in the chopped mode.

The main sweep gate, during sweep time, raises the base of Q720 through CR710. The collector is made more negative and the CRT is unblanked, during sweep time,

through circuitry in the main frame. In the delayed sweep mode, the base of Q720 is held low, through CR712, preventing the CRT from unblanking by the main sweep gate. Q695 improves unblanking from the main sweep at the faster sweep speeds. CR690 and CR691 are protective diodes for Q690 and the internal circuitry of U600 connected to pin 1.

Readout

The DLY'D, MAIN SEC/DIV, CAL, DLY'D SWP, MAIN SWP, INTENS SWP, and MAG switches have contacts wired into the readout circuitry. A zero to -15 V pulse, approximately 125 μ s in length, is applied at different times to all of the rear interface connectors associated with the readout circuitry, except the two column and row lines. These are the output lines. The readout circuitry, in the 5B42, sets the correct amount of current, to the appropriate channel row and column lines during the pulse time, for the particular character desired. See the main-frame manual for more details on the time slot and current required for each character. Connecting the anode of CR970 to +5 V, in the AMP mode, disables both main and delayed sweep readouts. When the DLY'D SWP pushbutton is in, +5 V is connected to the anode of CR971. This disables the main sweep readout. When either the MAIN SWP or INTENS SWP pushbuttons are depressed, the delay sweep readout is inactivated via CR976. When the MAG button is depressed, two additional zeros are added to the readout showing the correct time per division for the active sweeps. When the CAL knob is not in its detent position, the uncalibrated sign (>) appears in the slot for the main sweep only. Diodes CR901 through CR933, connected to the time slot lines, decouple noise pulses generated in the main frame readout circuitry.

Timing Switch Details

Timing capacitors and resistors are connected according to the switching chart shown on Schematic 7. The CAL potentiometer varies the timing resistance in any position of the MAIN SEC/DIV switch. Neons DS760 through DS766 illuminate the SEC/DIV knob skirts. The diodes in series with the lamps prevent series current from one lamp lighting another, in certain switch combinations.

SERVICE INFORMATION

Services Available

Tektronix, Inc. provides complete instrument repair and adjustment at local Field Service Centers and at the Factory Service Center. Contact your local Tektronix Field Office or Representative for further information.

Maintenance

Refer to the Power Supply/Amplifier manual for general service information. The A Board is the board on the left when facing the front of the 5B42. The B Board is on the right. To remove the A circuit board, remove the ten pushbuttons on the front panel located in the light green TRIG SOURCE area by pulling straight out. Remove the pushrods connected to the +SLOPE, SINGL SWP, AND RESET switches by separating the ends of the rods with a screwdriver. Unsolder the white and blue wire connected to the POSITION control, and the coaxial cable connected to the EXT TRIG BNC connector. Loosen the 0.050 inch

Allen screw on the CAL switch shaft, accessible through the hole in the A board, located as shown on the Controls & Adjustments pullout page. The knob must be in the CAL position. Remove the shaft by pulling the knob. Remove five screws on the A Board and four screws on the B Board as shown in the Adjustments location illustration. Fold the A Board back to gain access to the cam switches or other switches located between the boards.

Removal of the B Board will not usually be necessary, but may be accomplished by removing all leads soldered to the board. Remove the attached switch knobs and levers, and the three screws holding the board to the chassis.

Jumpers for the +5 V, +15 V, +30 V, -15 V, and -30 V supplies are located in the lower rear corner of the A Board. Remove these jumpers rather than the board interconnecting cable to isolate the A Board from the power supplies.

Symbols and Reference Designators

Electrical components shown on the diagrams are in the following units unless noted otherwise:

Capacitors = Values one or greater are in picofarads (pF).
 Values less than one are in microfarads (μ F).
 Resistors = Ohms (Ω)

Symbols used on the diagrams are based on ANSI Y32.2 — 1970.

Logic symbology is based on MIL-STD-806B in terms of positive logic. Logic symbols depict the logic function performed and may differ from the manufacturer's data.

The following special symbols are used on the diagrams:



External Screwdriver adjustment.



External control or connector.



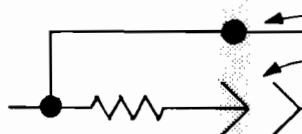
Clockwise control rotation in direction of arrow.



Refer to diagram number indicated in diamond.



Refer to waveform number indicated in hexagon.



Connection soldered to circuit board.

Connection made to circuit board with interconnecting pin.

Blue tint encloses components located on circuit board.

P/O circuit board

ELECTRICAL PARTS LIST

Replacement parts should be ordered from the Tektronix Field Office or Representative in your area. Changes to Tektronix products give you the benefit of improved circuits and components. Please include the instrument type number and serial number with each order for parts or service.

ABBREVIATIONS AND REFERENCE DESIGNATORS

A	Assembly, separable or repairable	FL	Filter	PTM	paper or plastic, tubular molded
AT	Attenuator, fixed or variable	H	Heat dissipating device (heat sink, etc.)	R	Resistor, fixed or variable
B	Motor	HR	Heater	RT	Thermistor
BT	Battery	J	Connector, stationary portion	S	Switch
C	Capacitor, fixed or variable	K	Relay	T	Transformer
Cer	Ceramic	L	Inductor, fixed or variable	TP	Test point
CR	Diode, signal or rectifier	LR	Inductor/resistor combination	U	Assembly, inseparable or non-repairable
CRT	cathode-ray tube	M	Meter	V	Electron tube
DL	Delay line	Q	Transistor or silicon-controlled rectifier	Var	Variable
DS	Indicating device (lamp)	P	Connector, movable portion	VR	Voltage regulator (zener diode, etc.)
Elect.	Electrolytic	PMC	Paper, metal cased	WW	wire-wound
EMC	electrolytic, metal cased	PT	paper, tubular	Y	Crystal
EMT	electrolytic, metal tubular				
F	Fuse				

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
ASSEMBLIES				
A1	670-2475-00			A Circuit Board Assembly
A2	670-2476-00			B Circuit Board Assembly
CAPACITORS				
C10	281-0509-00			15 pF, Cer, 10%, 500 V
C11	283-0001-00			0.005 uF, Cer, 500 V
C15	281-0182-00			1.8-10 pF, Var, Plastic, 300 V
C21	290-0534-00			1 uF, Elect., 20%, 35 V
C25	290-0534-00			1 uF, Elect., 20%, 35 V
C36	283-0003-00			0.01 uF, Cer, +80%-20%, 150 V
C60	290-0534-00			1 uF, Elect., 20%, 35 V
C62	281-0562-00			39 pF, Cer, 500 V
C67	290-0534-00			1 uF, Elect., 20%, 35 V
C73	290-0534-00			1 uF, Elect., 20%, 35 V
C80	283-0003-00			0.01 uF, Cer, +80%-20%, 150 V
C90	283-0110-00			0.005 uF, Cer, 150 V
C97	283-0000-00			0.001 uF, Cer, +100%-0%, 500 V
C98	290-0524-00			4.7 uF, Elect., 20%, 10 V
C99	283-0003-00			0.01 uF, Cer, +80%-20%, 150 V
C105	281-0519-00			47 pF, Cer, 10%, 500 V
C110	290-0534-00			1 uF, Elect., 20%, 35 V
C118	290-0534-00			1 uF, Elect., 20%, 35 V
C130	283-0003-00			0.01 uF, Cer, +80%-20%, 150 V
C155	281-0519-00			47 pF, Cer, 10%, 500 V
C160	290-0534-00			1 uF, Elect., 20%, 35 V
C168	290-0534-00			1 uF, Elect., 20%, 35 V

Ckt. No.	Tektronix Part No.	Serial/Model Eff	No. Disc	Description
CAPACITORS (cont)				
C180	283-0003-00			0.01 uF, Cer, +80%-20%, 150 V
C200	290-0534-00			1 uF, Elect., 20%, 35 V
C205	281-0512-00			27 pF, Cer, 10%, 500 V
C210	290-0534-00			1 uF, Elect., 20%, 35 V
C218	290-0534-00			1 uF, Elect., 20%, 35 V
C230	283-0003-00			0.01 uF, Cer, +80%-20%, 150 V
C280	283-0003-00			0.01 uF, Cer, +80%-20%, 150 V
C285	281-0510-00			22 pF, Cer, 20%, 500 V
C293	290-0534-00			1 uF, Elect., 20%, 35 V
C299	290-0534-00			1 uF, Elect., 20%, 35 V
C310	281-0524-00	B010100	B050657	150 pF, Cer, 20%, 500 V
C310	281-0523-00	B050658		100 pF, Cer, 20%, 350 V
C314	283-0003-00			0.01 uF, Cer, +80%-20%, 150 V
C330	290-0534-00			1 uF, Elect., 20%, 35 V
C335	290-0534-00			1 uF, Elect., 20%, 35 V
C350	281-0512-00	B010100	B030506	27 pF, Cer, 10%, 500 V
C350	281-0605-00	B030507	B050657	200 pF, Cer, 500 V
C350	281-0523-00	B050658		100 pF, Cer, 20%, 350 V
C370	283-0003-00			0.01 uF, Cer, +80%-20%, 150 V
C375	281-0510-00			22 pF, Cer, 20%, 500 V
C383	290-0534-00			1 uF, Elect., 20%, 35 V
C389	290-0534-00			1 uF, Elect., 20%, 35 V
C400	281-0524-00			150 pF, Cer, 20%, 500 V
C404	283-0003-00			0.01 uF, Cer, +80%-20%, 150 V
C410	283-0003-00			0.01 uF, Cer, +80%-20%, 150 V
C411	290-0534-00			1 uF, Elect., 20%, 35 V
C420	290-0534-00			1 uF, Elect., 20%, 35 V
C425	290-0534-00			1 uF, Elect., 20%, 35 V
C445	290-0534-00			1 uF, Elect., 20%, 35 V
C450	290-0534-00			1 uF, Elect., 20%, 35 V
C473	283-0000-00			0.001 uF, Cer, +100%-0%, 500 V
C480	281-0524-00			150 pF, Cer, 20%, 500 V
C490	290-0534-00			1 uF, Elect., 20%, 35 V
C495	290-0534-00			1 uF, Elect., 20%, 35 V
C500	281-0605-00			200 pF, Cer, 500 V
C501	290-0534-00			1 uF, Elect., 20%, 35 V
C502	283-0003-00			0.01 uF, Cer, +80%-20%, 150 V
C503	281-0523-00			100 pF, Cer, 20%, 350 V
C534	290-0534-00			1 uF, Elect., 20%, 35 V
C536	283-0003-00			0.01 uF, Cer, +80%-20%, 150 V
C538	283-0003-00			0.01 uF, Cer, +80%-20%, 150 V
C542	281-0523-00			100 pF, Cer, 20%, 350 V
C543	281-0510-00			22 pF, Cer, 20%, 500 V
C547	283-0003-00			0.01 uF, Cer, +80%-20%, 150 V
C550	281-0078-00			1.4-7.3 pF, Var, Air, 800 V
C551	283-0649-00			105 pF, Mica, 1%, 300 V

Ckt. No.	Tektronix Part No.	Serial/Model Eff	No. Disc	Description
CAPACITORS (cont)				
C554	1,2	295-0151-00		0.001 uF,
C556				0.1 uF, Timing Capacitor
C558				10 uF,
C586		283-0003-00		0.01 uF, Cer, +80%-20%, 150 V
C590		283-0003-00		0.01 uF, Cer, +80%-20%, 150 V
C593		283-0003-00		0.01 uF, Cer, +80%-20%, 150 V
C610		281-0523-00		100 pF, Cer, 20%, 350 V
C612		281-0510-00		22 pF, Cer, 20%, 500 V
C615		281-0078-00	B010100 B010199	1.4-7.3 pF, Var, Air, 800 V
C615		281-0079-00	B010200	1.5-9.1 pF, Var, Air, 800 V
C616		283-0631-00		95 pF, Mica, 1%, 100 V
C618	1,3	295-0151-00		0.01 uF,
C620				Timing Capacitor
C654				1 uF,
		281-0513-00		27 pF, Cer, 20%, 500 V
C685		283-0003-00		0.01 uF, Cer, +80%-20%, 150 V
C697		281-0512-00		27 pF, Cer, 10%, 500 V
C710		283-0000-00		0.001 uF, Cer, +100%-0%, 500 V
C732		281-0546-00		330 pF, Cer, 10%, 500 V
C750		283-0002-00		0.01 uF, Cer, 500 V
C762		283-0002-00		0.01 uF, Cer, 500 V
DIODES				
CR30		152-0141-02		Silicon, 1N4152
CR36		152-0141-02		Silicon, 1N4152
CR80		152-0141-02		Silicon, 1N4152
CR81		152-0153-00		Silicon, FD7003 or CD5574
CR87		152-0141-02		Silicon, 1N4152
CR130		152-0141-02		Silicon, 1N4152
CR131		152-0153-00		Silicon, FD7003 or CD5574
CR180		152-0141-02		Silicon, 1N4152
CR181		152-0153-00		Silicon, FD7003 or CD5574
CR230		152-0141-02		Silicon, 1N4152
CR231		152-0153-00		Silicon, FD7003 or CD5574
CR235		152-0141-02		Silicon, 1N4152
CR410		152-0153-00		Silicon, FD7003 or CD5574
CR411		152-0153-00		Silicon, FD7003 or CD5574
CR450		152-0141-02		Silicon, 1N4152
CR455		152-0141-02		Silicon, 1N4152
CR456		152-0141-02		Silicon, 1N4152
CR457		152-0141-02		Silicon, 1N4152
CR460		152-0141-02		Silicon, 1N4152
CR484		152-0141-02		Silicon, 1N4152
CR500		152-0141-02		Silicon, 1N4152
CR540		152-0141-02		Silicon, 1N4152

¹Individual timing capacitors in this assembly must be ordered by the 9 digit part number, letter suffix and tolerance printed on the timing capacitor to be replaced. The letter suffix and the tolerance should be the same for all of the timing capacitors in the assembly. EXAMPLE: _____|285-XXXX-XX F-|_____

²Furnished as a unit with C618 and C620.

³Furnished as a unit with C554, C556 and C558.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	No. Disc	Description
DIODES (cont)				
CR570	152-0141-02			Silicon, 1N4152
CR572	152-0141-02			Silicon, 1N4152
CR600	152-0153-00			Silicon, FD7003 or CD5574
CR685	152-0153-00			Silicon, FD7003 or CD5574
CR690	152-0153-00			Silicon, FD7003 or CD5574
CR691	152-0008-00			Germanium, T12G
CR702	152-0141-02			Silicon, 1N4152
CR710	152-0141-02			Silicon, 1N4152
CR712	152-0141-02			Silicon, 1N4152
CR720	152-0141-02			Silicon, 1N4152
CR730	152-0141-02			Silicon, 1N4152
CR732	152-0141-02			Silicon, 1N4152
CR752	152-0107-00			Silicon, TI60 or 1N647
CR756	152-0107-00			Silicon, TI60 or 1N647
CR760	152-0107-00			Silicon, TI60 or 1N647
CR761	152-0107-00			Silicon, TI60 or 1N647
CR762	152-0107-00			Silicon, TI60 or 1N647
CR901	152-0141-02			Silicon, 1N4152
CR903	152-0141-02			Silicon, 1N4152
CR905	152-0141-02			Silicon, 1N4152
CR907	152-0141-02			Silicon, 1N4152
CR909	152-0141-02			Silicon, 1N4152
CR911	152-0141-02			Silicon, 1N4152
CR913	152-0141-02			Silicon, 1N4152
CR921	152-0141-02			Silicon, 1N4152
CR923	152-0141-02			Silicon, 1N4152
CR925	152-0141-02			Silicon, 1N4152
CR927	152-0141-02			Silicon, 1N4152
CR929	152-0141-02			Silicon, 1N4152
CR931	152-0141-02			Silicon, 1N4152
CR933	152-0141-02			Silicon, 1N4152
CR970	152-0141-02			Silicon, 1N4152
CR971	152-0141-02			Silicon, 1N4152
CR975	152-0141-02			Silicon, 1N4152
CR976	152-0141-02			Silicon, 1N4152
BULBS				
DS450	150-0046-00			Incandescent, 21070
DS760	150-0111-00			Neon, AIC-T, 1.2 mA
DS762	150-0111-00			Neon, AIC-T, 1.2 mA
DS764	150-0111-00			Neon, AIC-T, 1.2 mA
DS766	150-0111-00			Neon, AIC-T, 1.2 mA
CONNECTOR				
J10	131-0955-00			Receptacle, electrical, BNC, female
INDUCTORS				
LR60	108-0245-00			3.9 uH
LR67	108-0245-00			3.9 uH
LR73	108-0245-00			3.9 uH
LR110	108-0245-00			3.9 uH
LR118	108-0245-00			3.9 uH

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff Disc	Description
INDUCTORS (cont)			
	LR160	108-0245-00	3.9 uH
	LR168	108-0245-00	3.9 uH
	LR200	108-0245-00	3.9 uH
	LR210	108-0245-00	3.9 uH
	LR218	108-0245-00	3.9 uH
	LR293	108-0245-00	3.9 uH
	LR299	108-0245-00	3.9 uH
	LR330	108-0245-00	3.9 uH
	LR335	108-0245-00	3.9 uH
	LR383	108-0245-00	3.9 uH
	LR389	108-0245-00	3.9 uH
	LR410	108-0245-00	3.9 uH
	LR420	108-0245-00	3.9 uH
	LR425	108-0245-00	3.9 uH
	LR445	108-0245-00	3.9 uH
TRANSISTORS			
	Q20, Q24	151-1042-00	Silicon, JFET, selected from 2N5245, pair
	Q34	151-0341-00	Silicon, NPN, 2N3565
	Q36	151-0341-00	Silicon, NPN, 2N3565
	Q60	151-0190-00	Silicon, NPN, 2N3904
	Q62	151-0190-00	Silicon, NPN, 2N3904
	Q80	151-0188-00	Silicon, PNP, 2N3906
	Q90	151-0341-00	Silicon, NPN, 2N3565
	Q100	151-0190-00	Silicon, NPN, 2N3904
	Q110	151-0190-00	Silicon, NPN, 2N3904
	Q130	151-0188-00	Silicon, PNP, 2N3906
	Q150	151-0190-00	Silicon, NPN, 2N3904
	Q160	151-0190-00	Silicon, NPN, 2N3904
	Q180	151-0188-00	Silicon, PNP, 2N3906
	Q200	151-0190-00	Silicon, NPN, 2N3904
	Q210	151-0190-00	Silicon, NPN, 2N3904
	Q230	151-0188-00	Silicon, PNP, 2N3906
	Q280	151-0190-00	Silicon, NPN, 2N3904
	Q290	151-0190-00	Silicon, NPN, 2N3904
	Q370	151-0190-00	Silicon, NPN, 2N3904
	Q380	151-0190-00	Silicon, NPN, 2N3904
	Q460	151-0188-00	Silicon, PNP, 2N3906
	Q470	151-0188-00	Silicon, PNP, 2N3906
	Q480	151-0188-00	Silicon, PNP, 2N3906
	Q540	151-1005-00	Silicon, JFET, N channel, Tek Spec
	Q570	151-0190-00	Silicon, NPN, 2N3904
	Q574	151-0341-00	Silicon, NPN, 2N3565
	Q650	151-0220-00	Silicon, PNP, 2N4122
	Q665	151-0188-00	Silicon, PNP, 2N3906
	Q670	151-0220-00	Silicon, PNP, 2N4122

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
TRANSISTORS (cont)				
Q680	151-0190-00			Silicon, NPN, 2N3904
Q690	151-0325-00			Silicon, PNP, 2N4258
Q695	151-0188-00			Silicon, PNP, 2N3906
Q700	151-0195-00			Silicon, NPN, selected from MPS6515
Q720	151-0195-00			Silicon, NPN, selected from MPS6515
Q730	151-0188-00			Silicon, PNP, 2N3906
RESISTORS				
R10	316-0330-00			33 ohm, 10%, 0.25 W
R11	321-0452-00			499K ohm, 1%, 0.125 W
R15	321-0452-00			499K ohm, 1%, 0.125 W
R16	316-0101-00			100 ohm, 10%, 0.25 W
R20	316-0220-00			22 ohm, 10%, 0.25 W
R21	316-0330-00			33 ohm, 10%, 0.25 W
R25	311-1568-00			50 ohm, Var
R26	316-0330-00			33 ohm, 10%, 0.25 W
R30	316-0153-00			15K ohm, 10%, 0.25 W
R36	316-0472-00			4.7K ohm, 10%, 0.25 W
R38	315-0621-00			620 ohm, 5%, 0.25 W
R40	316-0223-00			22K ohm, 10%, 0.25 W
R42	315-0392-00			3.9K ohm, 5%, 0.25 W
R45	321-0204-00			1.3K ohm, 1%, 0.125 W
R47	316-0153-00			15K ohm, 10%, 0.25 W
R49	321-0342-00			35.7K ohm, 1%, 0.125 W
R50	321-0190-00			931 ohm, 1%, 0.125 W
R52	311-1566-00			200 ohm, Var
R60	316-0330-00			33 ohm, 10%, 0.25 W
R62	316-0390-00			39 ohm, 10%, 0.25 W
R65	315-0680-00			68 ohm, 5%, 0.25 W
R67	323-0185-00			825 ohm, 1%, 0.5 W
R69	315-0680-00			68 ohm, 5%, 0.25 W
R70	316-0330-00			33 ohm, 10%, 0.25 W
R73	322-0173-00			619 ohm, 1%, 0.25 W
R80	315-0203-00			20K ohm, 5%, 0.25 W
R83	316-0183-00			18K ohm, 10%, 0.25 W
R85	316-0153-00			15K ohm, 10%, 0.25 W
R87	322-0218-00			1.82K ohm, 1%, 0.25 W
R90	316-0564-00			560K ohm, 10%, 0.25 W
R93	315-0222-00			2.2K ohm, 5%, 0.25 W
R95	316-0562-00			5.6K ohm, 10%, 0.25 W
R97	321-0151-00			365 ohm, 1%, 0.125 W
R100	316-0330-00			33 ohm, 10%, 0.25 W
R103	321-0078-00			63.4 ohm, 1%, 0.125 W
R105	316-0220-00			22 ohm, 10%, 0.25 W
R108	315-0300-00			30 ohm, 5%, 0.25 W
R110	323-0188-00			887 ohm, 1%, 0.5 W

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
RESISTORS (cont)				
R114	315-0300-00			30 ohm, 5%, 0.25 W
R115	316-0330-00			33 ohm, 10%, 0.25 W
R118	322-0175-00			649 ohm, 1%, 0.25 W
R130	315-0203-00			20K ohm, 5%, 0.25 W
R135	316-0183-00			18K ohm, 10%, 0.25 W
R137	316-0153-00			15K ohm, 10%, 0.25 W
R139	321-0149-00			348 ohm, 1%, 0.125 W
R140	322-0222-00			2K ohm, 1%, 0.25 W
R150	316-0330-00			33 ohm, 10%, 0.25 W
R153	321-0078-00			63.4 ohm, 1%, 0.125 W
R155	316-0220-00			22 ohm, 10%, 0.25 W
R158	315-0300-00			30 ohm, 5%, 0.25 W
R160	323-0188-00			887 ohm, 1%, 0.5 W
R164	315-0300-00			30 ohm, 5%, 0.25 W
R165	316-0330-00			33 ohm, 10%, 0.25 W
R168	322-0175-00			649 ohm, 1%, 0.25 W
R180	315-0203-00			20K ohm, 5%, 0.25 W
R185	316-0183-00			18K ohm, 10%, 0.25 W
R187	316-0153-00			15K ohm, 10%, 0.25 W
R200	316-0330-00			33 ohm, 10%, 0.25 W
R205	316-0101-00			100 ohm, 10%, 0.25 W
R208	315-0131-00			130 ohm, 5%, 0.25 W
R210	323-0185-00			825 ohm, 1%, 0.5 W
R214	315-0131-00			130 ohm, 5%, 0.25 W
R215	316-0330-00			33 ohm, 10%, 0.25 W
R218	322-0173-00			619 ohm, 1%, 0.25 W
R228	316-0270-00			27 ohm, 10%, 0.25 W
R230	315-0203-00			20K ohm, 5%, 0.25 W
R235	315-0822-00			8.2K ohm, 5%, 0.25 W
R236	315-0103-00			10K ohm, 5%, 0.25 W
R237	316-0153-00			15K ohm, 10%, 0.25 W
R280	316-0222-00			2.2K ohm, 10%, 0.25 W
R282	315-0680-00			68 ohm, 5%, 0.25 W
R285	315-0821-00			82 ohm, 5%, 0.25 W
R287	315-0821-00			82 ohm, 5%, 0.25 W
R290	315-0821-00			82 ohm, 5%, 0.25 W
R293	323-0208-00			1.43K ohm, 1%, 0.5 W
R298	321-0097-00			100 ohm, 1%, 0.125 W
R299	321-0087-00			78.7 ohm, 1%, 0.125 W
R310	315-0680-00			68 ohm, 5%, 0.25 W
R312	315-0222-00			2.2K ohm, 5%, 0.25 W
R314	315-0133-00			13K ohm, 5%, 0.25 W
R320	311-0580-00			50K ohm, Var
R325	316-0122-00			1.2K ohm, 10%, 0.25 W
R326	315-0220-00			22 ohm, 5%, 0.25 W

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	No. Disc	Description
RESISTORS (cont)				
R328	315-0430-00			43 ohm, 5%, 0.25 W
R329	316-0122-00			1.2K ohm, 10%, 0.25 W
R332	316-0102-00			1K ohm, 10%, 0.25 W
R334	316-0102-00			1K ohm, 10%, 0.25 W
R336	316-0102-00			1K ohm, 10%, 0.25 W
R337	315-0331-00			330 ohm, 5%, 0.25 W
R339	316-0102-00			1K ohm, 10%, 0.25 W
R342	316-0102-00			1K ohm, 10%, 0.25 W
R345	316-0102-00			1K ohm, 10%, 0.25 W
R347	316-0102-00			1K ohm, 10%, 0.25 W
R348	315-0682-00			6.8K ohm, 5%, 0.25 W
R350	315-0362-00			3.6K ohm, 5%, 0.25 W
R354	315-0102-00	B010100	B050657	1K ohm, 5%, 0.25 W
R354	315-0132-00	B050658		1.3K ohm, 5%, 0.25 W
R356	315-0182-00			1.8K ohm, 5%, 0.25 W
R357	315-0102-00			1K ohm, 5%, 0.25 W
R370	316-0330-00	B010100	B010250	33 ohm, 10%, 0.25 W
R370	315-0680-00	B010251		68 ohm, 5%, 0.25 W
R375	316-0101-00			100 ohm, 10%, 0.25 W
R377	315-0820-00			82 ohm, 5%, 0.25 W
R380	315-0820-00			82 ohm, 5%, 0.25 W
R383	323-0208-00			1.43K ohm, 1%, 0.5 W
R388	321-0097-00			100 ohm, 1%, 0.125 W
R389	321-0087-00			78.7 ohm, 1%, 0.125 W
R400	316-0330-00	B010100	B010250	33 ohm, 10%, 0.25 W
R400	315-0680-00	B010251		68 ohm, 5%, 0.25 W
R402	315-0222-00			2.2K ohm, 5%, 0.25 W
R404	315-0133-00			13K ohm, 5%, 0.25 W
R410	311-0580-00			50K ohm, Var
R415	316-0122-00			1.2K ohm, 10%, 0.25 W
R416	315-0220-00			22 ohm, 5%, 0.25 W
R418	315-0430-00			43 ohm, 5%, 0.25 W
R419	316-0122-00			1.2K ohm, 10%, 0.25 W
R422	316-0102-00			1K ohm, 10%, 0.25 W
R424	316-0102-00			1K ohm, 10%, 0.25 W
R426	316-0102-00			1K ohm, 10%, 0.25 W
R429	316-0102-00			1K ohm, 10%, 0.25 W
R432	316-0102-00			1K ohm, 10%, 0.25 W
R435	316-0102-00			1K ohm, 10%, 0.25 W
R437	316-0102-00			1K ohm, 10%, 0.25 W
R438	315-0201-00			200 ohm, 5%, 0.25 W
R440	315-0911-00			910 ohm, 5%, 0.25 W
R450	316-0102-00			1K ohm, 10%, 0.25 W
R451	316-0180-00			18 ohm, 10%, 0.25 W
R452	315-0181-00	XB020000		180 ohm, 5%, 0.25 W
R455	316-0472-00			4.7K ohm, 10%, 0.25 W
R460	315-0202-00			2K ohm, 5%, 0.25 W
R464	321-0259-00			4.87K ohm, 1%, 0.125 W
R465	315-0123-00	B010100	B039999	12K ohm, 5%, 0.25 W
R465	321-0298-00	B040000		12.4K ohm, 1%, 0.125 W

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
RESISTORS (cont)				
R468	315-0242-00	B010100	B039999	2.4K ohm, 5%, 0.25 W
R468	321-0228-00	B040000		2.32K ohm, 1%, 0.125 W
R470	321-0247-00			3.65K ohm, 1%, 0.125 W
R472	315-0223-00			22K ohm, 5%, 0.25 W
R473	315-0202-00			2K ohm, 5%, 0.25 W
R475	321-0193-00			1K ohm, 1%, 0.125 W
R476	321-0253-00			4.22K ohm, 1%, 0.125 W
R480	316-0102-00			1K ohm, 10%, 0.25 W
R482	315-0471-00			470 ohm, 5%, 0.25 W
R483	315-0131-00			130 ohm, 5%, 0.25 W
R484	315-0681-00			680 ohm, 5%, 0.25 W
R489	316-0332-00			3.3K ohm, 10%, 0.25 W
R490	301-0391-00			390 ohm, 5%, 0.5 W
R495	316-0334-00			330K ohm, 10%, 0.25 W
R500	315-0163-00			16K ohm, 5%, 0.25 W
R503	315-0154-00			150K ohm, 5%, 0.25 W
R520	311-1324-00			10K ohm, Var
R522	311-1560-00			5K ohm, Var
R523	321-0318-02			20K ohm, 0.5%, 0.125 W
R525	321-0829-02			202 ohm, 0.5%, 0.125 W
R527	321-0332-00			28K ohm, 1%, 0.125 W
R530	311-1555-00			100K ohm, Var
R534	316-0103-00			10K ohm, 10%, 0.25 W
R536	316-0104-00			100K ohm, 10%, 0.25 W
R538	316-0100-00			10 ohm, 10%, 0.25 W
R540	316-0153-00			15K ohm, 10%, 0.25 W
R542	315-0101-00			100 ohm, 5%, (nominal value), selected
R543	316-0274-00			270K ohm, 10%, 0.25 W
R545	311-1555-00			100K ohm, Var
R547	315-0621-00			620 ohm, 5%, 0.25 W
R549	316-0473-00			47K ohm, 10%, 0.25 W
R550 ¹	311-1537-00			20K ohm, Var
R551	321-0289-00			10K ohm, 1%, 0.125 W
R552	321-0164-00			499 ohm, 1%, 0.125 W
R556	316-0124-00			120K ohm, 10%, 0.25 W
R557	321-0234-00			2.67K ohm, 1%, 0.125 W
R559	321-0268-03			6.04K ohm, 0.25%, 0.125 W
R560	321-0827-03			3.61K ohm, 0.25%, 0.125 W
R562	321-0830-03			2.41K ohm, 0.25%, 0.125 W
R564	321-0200-00			1.18K ohm, 1%, 0.125 W
R566	323-0498-03			1.5M ohm, 0.25%, 0.5 W
R567	323-0498-03			1.5M ohm, 0.25%, 0.5 W
R569	321-0917-03			27.2K ohm, 0.25%, 0.125 W
R570	321-0856-03			330K ohm, 0.25%, 0.125 W
R571	315-0912-00			9.1K ohm, 5%, 0.25 W
R573	316-0332-00			3.3K ohm, 10%, 0.25 W

¹Furnished as a unit with S900.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
RESISTORS (cont)				
R574	316-0103-00			10K ohm, 10%, 0.25 W
R580	315-0911-00			910 ohm, 5%, 0.25 W
R581	315-0103-00			10K ohm, 5%, 0.25 W
R585	321-0365-00			61.9K ohm, 1%, 0.125 W
R586	321-0385-00			100K ohm, 1%, 0.125 W
R590	315-0621-00			620 ohm, 5%, 0.25 W
R593	316-0100-00			10 ohm, 10%, 0.25 W
R595	316-0682-00			6.8K ohm, 10%, 0.25 W
R600	316-0562-00			5.6K ohm, 10%, 0.25 W
R604	316-0473-00			47K ohm, 10%, 0.25 W
R610	316-0101-00			100 ohm, 10%, 0.25 W
R615	321-0286-00			9.31K ohm, 1%, 0.125 W
R616	321-0164-00			499 ohm, 1%, 0.125 W
R618	321-0234-00			2.67K ohm, 1%, 0.125 W
R620	321-0268-03			6.04K ohm, 0.25%, 0.125 W
R622	321-0827-03			3.61K ohm, 0.25%, 0.125 W
R623	321-0830-03			2.41K ohm, 0.25%, 0.125 W
R625	321-0200-00			1.18K ohm, 1%, 0.125 W
R627	323-0498-03			1.5M ohm, 0.25%, 0.5 W
R628	323-0498-03			1.5M ohm, 0.25%, 0.5 W
R630	321-0917-03			27.2K ohm, 0.25%, 0.125 W
R632	321-0856-03			330K ohm, 0.25%, 0.125 W
R638	321-0830-03			2.41K ohm, 0.25%, 0.125 W
R640	321-0830-03			2.41K ohm, 0.25%, 0.125 W
R642	321-0193-00			1K ohm, 1%, 0.125 W
R648	321-0331-00			27.4K ohm, 1%, 0.125 W
R650	321-0259-00			4.87K ohm, 1%, 0.125 W
R651	321-0098-00			102 ohm, 1%, 0.125 W
R652	321-0222-00			2K ohm, 1%, 0.125 W
R653	321-0231-00			2.49K ohm, 1%, 0.125 W
R655	311-1562-00			2K ohm, Var
R656	321-0222-00			2K ohm, 1%, 0.125 W
R658	311-1568-00			50 ohm, Var
R660	321-0108-00			130 ohm, 1%, 0.125 W
R665	316-0101-00			100 ohm, 10%, 0.25 W
R667	322-0229-00			2.37K ohm, 1%, 0.25 W
R670	321-0259-00			4.87K ohm, 1%, 0.125 W
R672	321-0098-00			102 ohm, 1%, 0.125 W
R674	321-0286-00			9.31K ohm, 1%, 0.125 W
R675	321-0210-00			1.5K ohm, 1%, 0.125 W
R678	321-0172-00			604 ohm, 1%, 0.125 W
R679	321-0269-00			6.19K ohm, 1%, 0.125 W
R680	311-0310-01	B010100 B010250		5K ohm, Var
R680	311-0310-00	B010251		5K ohm, Var
R682	316-0332-00			3.3K ohm, 10%, 0.25 W
R683	316-0332-00			3.3K ohm, 10%, 0.25 W

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description
RESISTORS (cont)				
R685	315-0272-00			2.7K ohm, 5%, 0.25 W
R691	315-0202-00			2K ohm, 5%, 0.25 W
R693	315-0471-00			470 ohm, 5%, 0.25 W
R695	315-0132-00			1.3K ohm, 5%, 0.25 W
R697	315-0132-00			1.3K ohm, 5%, 0.25 W
R700	315-0751-00			750 ohm, 5%, 0.25 W
R702	315-0271-00			270 ohm, 5%, 0.25 W
R705	315-0202-00			2K ohm, 5%, 0.25 W
R710	315-0681-00			680 ohm, 5%, 0.25 W
R720	315-0202-00			2K ohm, 5%, 0.25 W
R722	315-0751-00			750 ohm, 5%, 0.25 W
R724	315-0271-00			270 ohm, 5%, 0.25 W
R732	315-0332-00			3.3K ohm, 5%, 0.25 W
R735	315-0152-00			1.5K ohm, 5%, 0.25 W
R750	316-0102-00			1K ohm, 10%, 0.25 W
R752	315-0913-00			91K ohm, 5%, 0.25 W
R754	315-0913-00			91K ohm, 5%, 0.25 W
R756	315-0913-00			91K ohm, 5%, 0.25 W
R900	315-0133-00			13K ohm, 5%, 0.25 W
R901	315-0753-00			75K ohm, 5%, 0.25 W
R903	315-0154-00			150K ohm, 5%, 0.25 W
R905	315-0154-00			150K ohm, 5%, 0.25 W
R907	321-0344-00			37.4K ohm, 1%, 0.125 W
R909	315-0154-00			150K ohm, 5%, 0.25 W
R911	315-0753-00			75K ohm, 5%, 0.25 W
R913	315-0513-00			51K ohm, 5%, 0.25 W
R921	315-0513-00			51K ohm, 5%, 0.25 W
R923	315-0753-00			75K ohm, 5%, 0.25 W
R925	315-0154-00			150K ohm, 5%, 0.25 W
R927	321-0344-00			37.4K ohm, 1%, 0.125 W
R929	315-0154-00			150K ohm, 5%, 0.25 W
R931	315-0154-00			150K ohm, 5%, 0.25 W
R933	315-0753-00			75K ohm, 5%, 0.25 W
R940	321-0344-00			37.4K ohm, 1%, 0.125 W
R942	315-0513-00			51K ohm, 5%, 0.25 W
R944	315-0753-00			75K ohm, 5%, 0.25 W
R946	315-0154-00			150K ohm, 5%, 0.25 W
R948	315-0753-00			75K ohm, 5%, 0.25 W
R950	321-0344-00			37.4K ohm, 1%, 0.125 W
R952	315-0513-00			51K ohm, 5%, 0.25 W
R954	315-0753-00			75K ohm, 5%, 0.25 W
R956	315-0154-00			150K ohm, 5%, 0.25 W
R958	315-0753-00			75K ohm, 5%, 0.25 W
R960	315-0154-00			150K ohm, 5%, 0.25 W

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff Disc	Description
RESISTORS (cont)			
R961	315-0154-00		150K ohm, 5%, 0.25 W
R965	315-0154-00		150K ohm, 5%, 0.25 W
R970	316-0332-00		3.3K ohm, 10%, 0.25 W
R975	316-0332-00		3.3K ohm, 10%, 0.25 W
SWITCHES			
S10A}	260-1448-00		Push, AC COUPL
S10B}			Push, LF REJ
S10C}			Push, AUTO TRIG
S60A}	260-1556-00		Push, EXT
S60B}			Push, LINE
S60C}			Push, RIGHT
S60D}			Push, LEFT
S95	260-1554-00		Push
S320A}	260-1487-00		Push, + SLOPE
S320B}			Push, SINGLE SWP
S320C}			Push, RESET
S400	260-1445-00		Push, TRIG AFTER DLY
S410	260-1208-00		Push, + SLOPE
S550A	263-1023-00		Actuator assembly, Cam, MAIN SEC/DIV
S550B	263-1022-00		Actuator assembly, Cam, DLY'D SEC/DIV
S575A}	260-1555-00		Push, MAIN SWP
S575B}			Push, DLY'D SWP
S575C}			Push, INTENS SWP
S650	260-1209-00		Push, SWP MAG
S700	260-1211-00		Push, CJOP
S900 ¹			CAL
INTEGRATED CIRCUITS			
U320	156-0295-00		Triple 2-input exclusive or/exclusive nor gate, MC10107L
U330	156-0205-00		Quad 2-input positive nor gate, MC10102
U335	156-0182-00		Type 2-3-2 in-put gate, MC10105
U410	156-0295-00		Triple 2-input exclusive or/exclusive nor gate, MC10107L
U420	156-0205-00		Quad 2-input positive nor gate, MC10102
U425	156-0182-00		Type 2-3-2 in-put gate, MC10105
U450	155-0049-01		Monolithic, sweep control
U550	155-0042-03		Monolithic, miller integrator and delay pickoff
U600	155-0042-03		Monolithic, miller integrator and delay pickoff
DIODES, ZENER			
VR30	152-0278-00		1N4372A, 0.4 W, 5%, 3 V
VR42	152-0226-00		1N751A, 0.4 W, 5%, 5.1 V
VR490	152-0226-00		1N751A, 0.4 W, 5%, 5.1 V

¹Furnished as a unit with R550.

INTERNAL ADJUSTMENT PROCEDURE

Test Equipment

For calibration, and a complete accuracy check of the 5B42, the following equipment is required:

Tektronix Type 2901 Time Mark Generator or equivalent.

Square Wave Generator capable of producing a 0.5 V, 1 kHz square wave, Tektronix Calibration Fixture 067-0502-01, or equivalent.

5400 Series Oscilloscope.

Vertical Plug-In for the 5400 Series Oscilloscope, such as the 5A48 Dual Trace Amplifier.

Voltmeter, at least 20,000 Ω/V , or oscilloscope with 10X probe capable of accurately determining 0 V.

50 Ω Coaxial Cable with BNC connectors, Tektronix Part No. 012-0057-01.

Plug-In Extender, Tektronix Part No. 067-0645-00.

Preparation

Remove the covers from the 5B42 and the cabinet panels from the 5400-series oscilloscope. Insert the 5B42 in the right hand plug-in compartment. Connect the plug-in extender to the left hand vertical plug-in interface connector, and connect the vertical plug-in to the extender. Make certain that the vertical plug-in is oriented properly: top of the plug-in to top of the extender, to top of the oscilloscope interface connector. Use of the extender on the vertical plug-in is necessary to gain access to adjustments on the A Board. See the Adjustments foldout page for the test point and adjustment locations. Make adjustments at an ambient temperature between +20°C and +30°C (+68°F and +86°F) for best accuracy.

1. Adjust External Horizontal Balance

Set the MAIN SEC/DIV switch to 1 m, and push the AUTO TRIG, EXT, and MAIN SWP buttons. All other buttons should be out. Obtain a visible free running trace that is vertically centered in the graticule area by adjusting the vertical and horizontal POSITION controls and the display module INTENSITY control. Using the 5B42 POSITION control, position the start of the trace at the extreme left vertical graticule line. Switch the MAIN SEC/DIV switch to the AMP position. Reduce the INTENSITY control, if necessary, to prevent burning the

phosphor. Move the spot horizontally to the graticule center by adjusting R25, Ext Hor Cent, located on the A Board.

2. Adjust External Horizontal Gain

Apply a 0.5 V, 1 kHz square wave from the square-wave generator through the coaxial cable to the EXT HORIZ AMPL connector. Adjust R52, Ext Hor Gain, located on the A Board for 10 divisions of horizontal deflection. Use the 5B42 POSITION control to position the dots to the extreme right and left vertical graticule lines while making this adjustment.

3. Adjust Input Attenuator Compensation

Adjust C15, Att Comp, located on the A Board for minimum horizontal overshoot or undershoot on the two dots referred to in the previous step.

4. Adjust Main Sweep Offset

Connect the probe of the test oscilloscope (set for 50 mV/Div) or the positive lead of the voltmeter to TP545. Connect the negative lead to the 5B42 chassis. Adjust R545, Main Swp Offset on the A Board for a reading of 0 V.

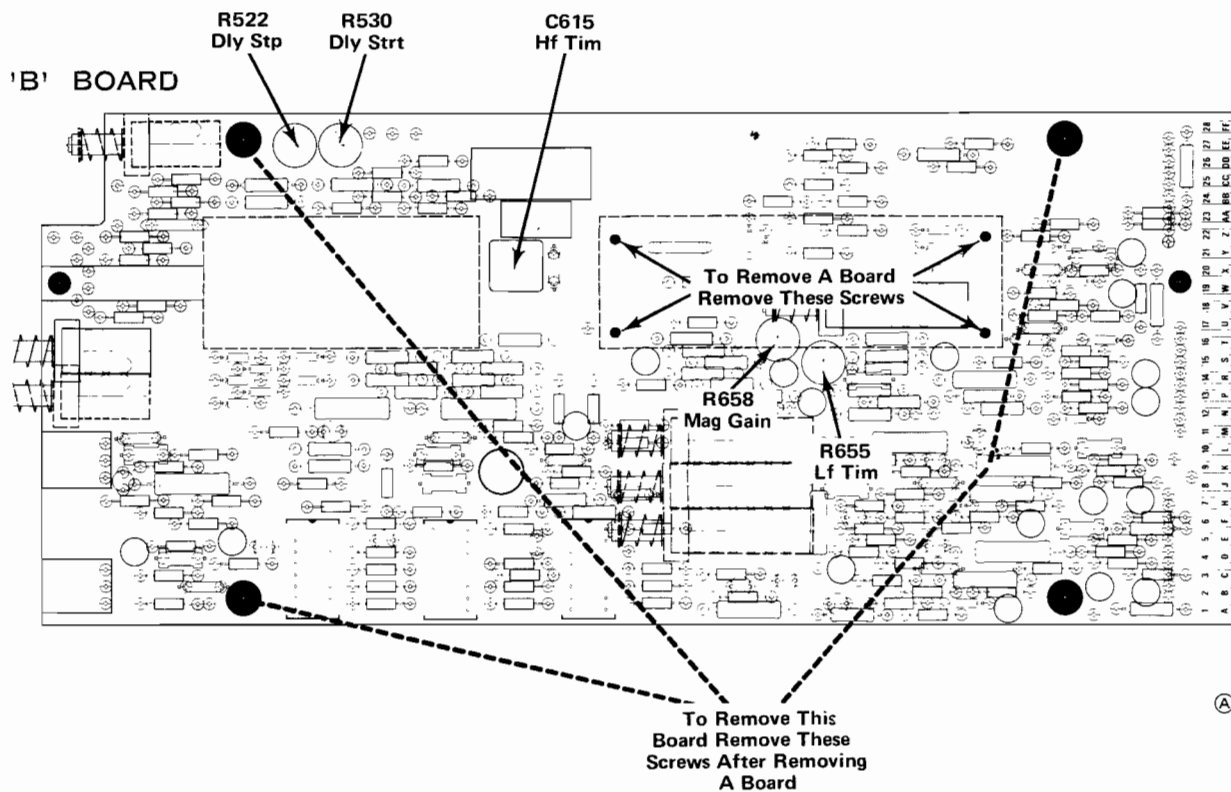
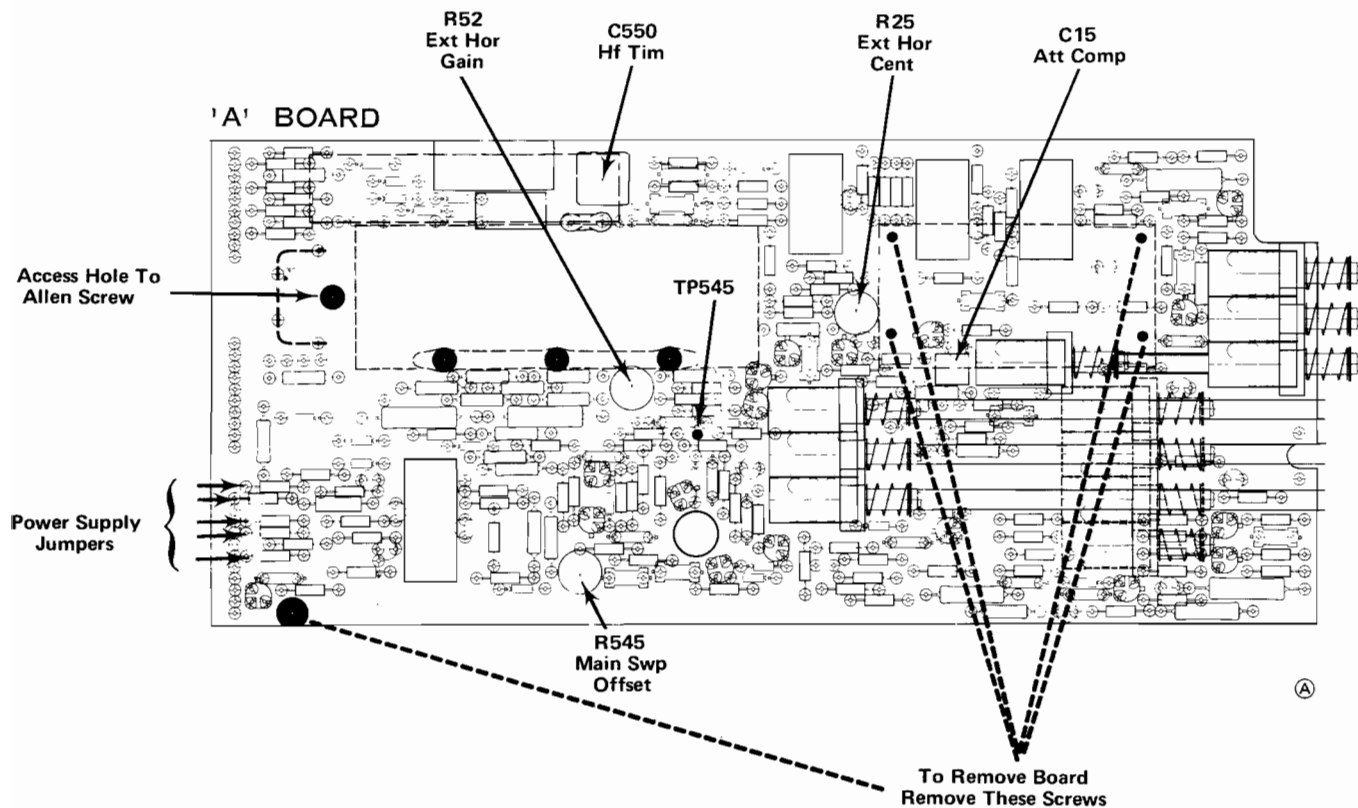
5. Adjust 1 ms Timing

Connect the time mark generator to the vertical plug-in. Set the generator for 1 ms markers. Set the MAIN SEC/DIV switch to position 1 m, and push the LEFT TRIG SOURCE button. Obtain a stable display by adjusting the MAIN TRIG LEVEL knob. Make certain that the CAL knob is in the extreme clockwise detent position. Adjust R655, Lf Tim, on the B Board for a spacing of one time mark per vertical graticule line. Set the DLY'D SEC/DIV SWP button. Check for a spacing of one marker per vertical graticule line, within specifications. Push the MAIN SWP button.

6. Adjust Fast Main Sweep Timing

Set the MAIN SEC/DIV switch to the .5 μ position. Apply 0.5 μ s markers to the vertical plug-in. Obtain a stable display. Adjust C550, Hf Tim, on the A Board for one time mark per vertical graticule line. Check the .2 μ and .1 μ positions of the MAIN SEC/DIV switch for one mark per vertical graticule line, within specifications. It may be necessary to go back to the .5 μ position and compromise the adjustment of C550 so that all three ranges are within specifications.

ADJUSTMENTS



7. Adjust Magnifier Gain

Change the MAIN SEC/DIV switch to position 1 m. Apply 0.1 ms markers to the vertical plug-in. Obtain a stable display. Center the trace horizontally in the graticule area. Press the SWP MAG button. Adjust R658, Mag Gain, located on the B Board for one time mark per vertical graticule line. Release the SWP MAG button.

8. Adjust Delayed Sweep Fast Timing

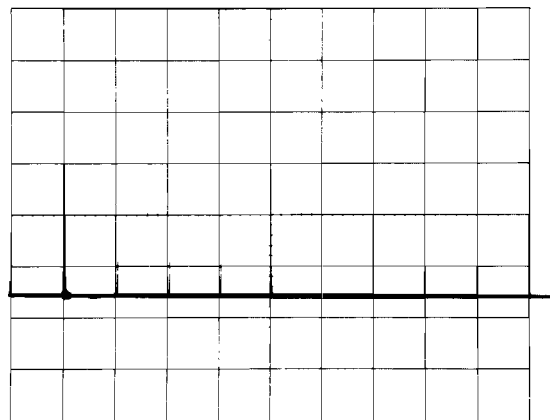
Push the DLY'D SWP button. Set the DLY'D SEC/DIV switch to the $.5 \mu$ position and the MAIN SEC/DIV switch to the 1μ position. Apply 0.5μ s markers to the vertical plug-in. Obtain a stable display by adjusting the MAIN TRIG LEVEL control. Set the DELAY TIME MULT dial fully CCW. Adjust C615, Hf Tim, on the B Board for one time mark per vertical graticule line.

9. Adjust Delay Sweep Start

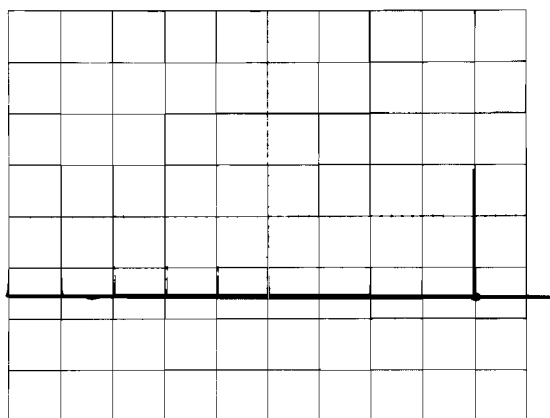
Change the MAIN SEC/DIV dial to the 0.1 m position. Press the INTENS SWP button. Set the DLY'D SEC/DIV switch to the 10μ position. Apply 0.1 ms markers to the vertical plug-in. Obtain a stable display by adjusting the MAIN TRIG LEVEL control. Check that the DELAY TIME MULT dial reads 0.2 in the fully CCW position. If not, loosen the Allen set screw and reset the dial. Adjust the intensity control so that the intensified portion of the sweep is clearly visible. Position the trace so that the trace starts on the extreme left graticule line. Set the DELAY TIME MULT dial to read 1.00. Adjust R530, Dly Strt, located on the B Board so that the intensified portion of the sweep starts on the second vertical graticule line from the left of the graticule. See Fig. 3-1A.

10. Adjust Delay Sweep Stop

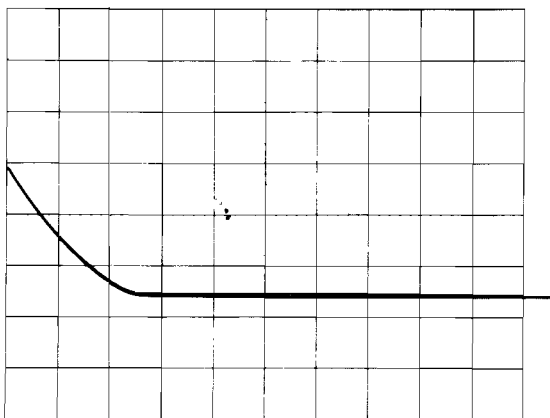
Make certain that the INTENS SWP button is depressed. Turn the DELAY TIME MULT dial to read 9.00. Make certain that the trace starts at the extreme left graticule line. Adjust R522, Dly Stp, located on the B Board so that the intensified portion of the trace starts on the second vertical graticule line from the right of the graticule. See Fig. 3-1B. Go back to step 9 and repeat both steps until no interaction exists. To make the final adjustments, press the DLY'D SWP button. Adjust the delay start and stop potentiometers so that the time marks, visible at the start of the intensified portion in the intensified sweep mode, are just visible at the start of the trace in the delayed sweep mode. Fig. 3-1C shows the correct settings.



(A) Intensified portion set to 2nd time marker.



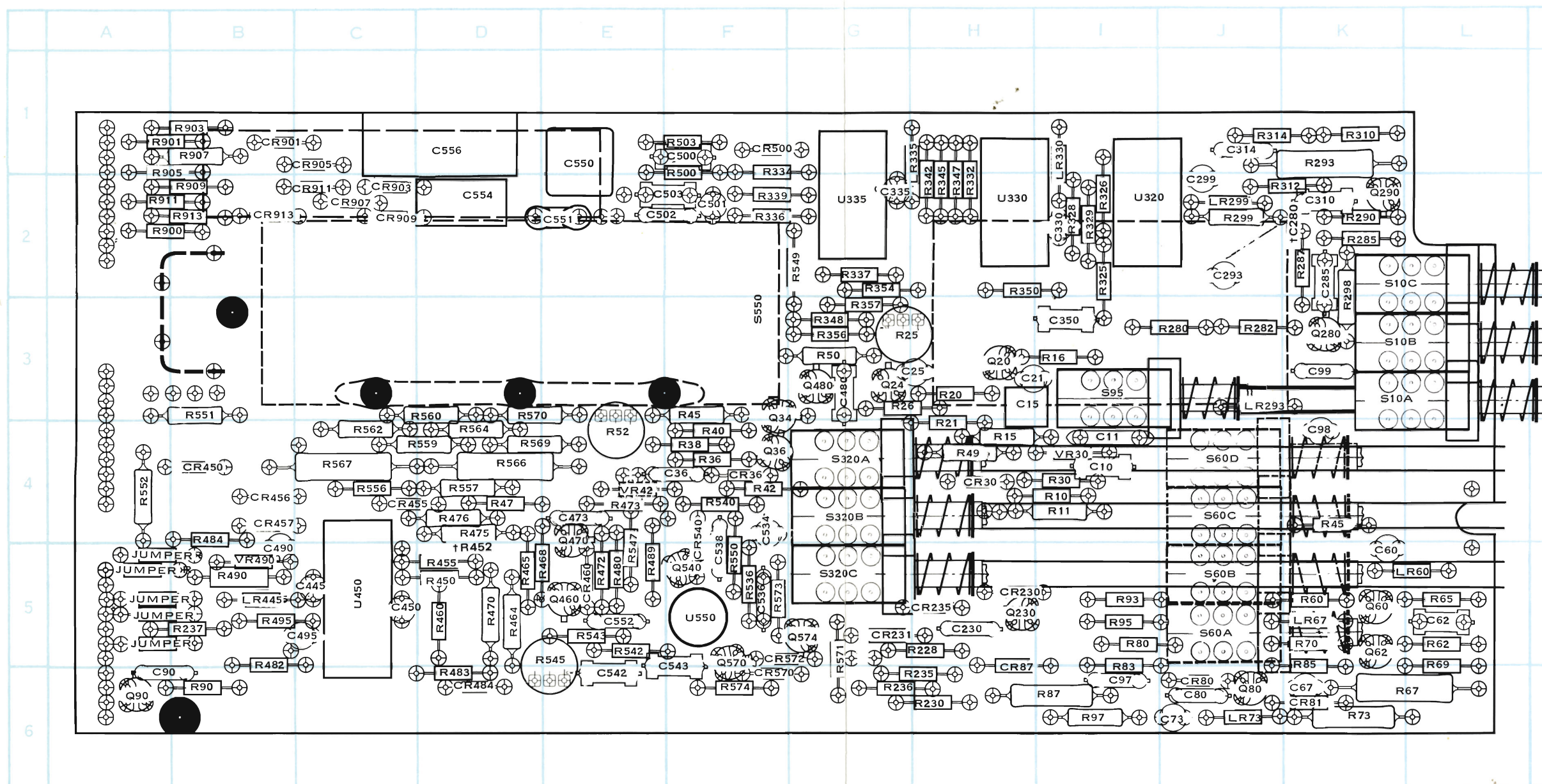
(B) Intensified portion set to 10th time marker.



(C) Typical display showing correct adjustment of R522 and R530.

Fig. 3-1. Delay Start and Stop adjustments.

PARTS LOCATION GRID

PARTS LOCATION GRID A
BOARD

COMPONENTS SHOWN WITH DASHED LINES ARE LOCATED ON BACK SIDE OF BOARD.

† Relocate to front of Board

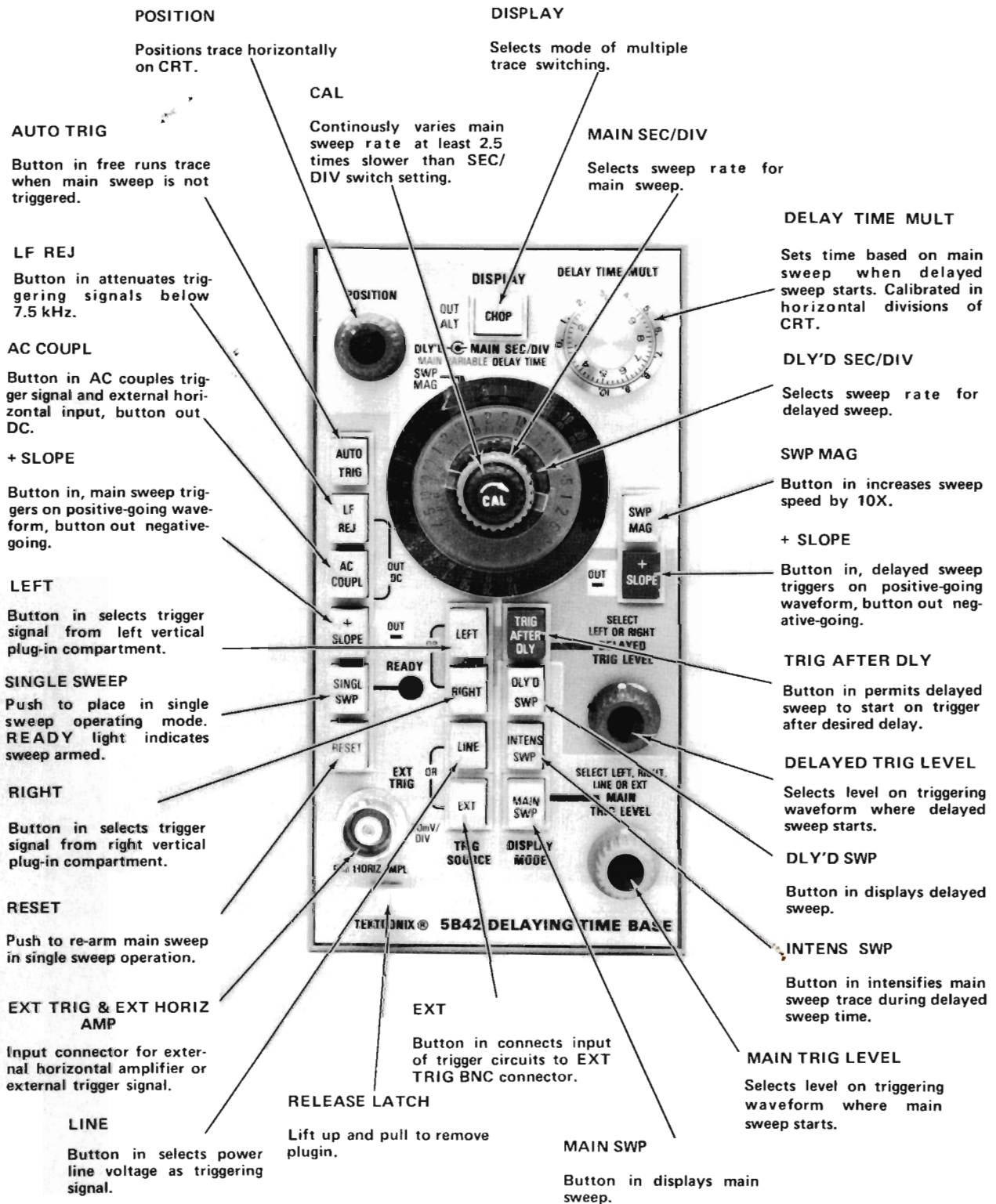
CKT NO	GRID LOC
C10	I-4
C11	I-4
C15	H-3
C21	H-3
C25	H-3
C36	F-4
C60	K-5
C62	L-5
C67	K-6
C73	J-6
C80	J-6
C90	A-6
C97	I-6
C98	K-4
C99	K-3
C230	H-5
C280	K-2
C285	K-2
C293	J-2
C299	J-2
C310	K-2
C314	J-1
C330	I-2
C335	G-2
C350	I-3
C445	C-5
C450	C-5
C473	E-4
C480	G-3
C490	B-5
C495	C-5
C500	F-1
C501	F-2
C502	F-2
C503	F-2
C534	F-4
C536	F-5
C538	F-5
C542	E-6
C543	F-5
C550	E-1
C551	E-2
C552	E-5
C554	D-2
C556	D-1
CR30	H-4
CR36	F-4
CR80	J-6
CR81	K-6
CR87	H-4
CR230	H-5
CR231	G-4
CR235	H-5
CR450	B-4
CR455	C-4
CR456	B-4
CR457	B-4
CR460	E-5
CR484	D-6
CR500	F-1
CR540	F-4
CR570	F-6
CR572	F-5
CR901	B-1
CR903	C-2
CR905	C-1
CR907	C-2
CR909	C-2
CR911	C-2
CR913	B-2

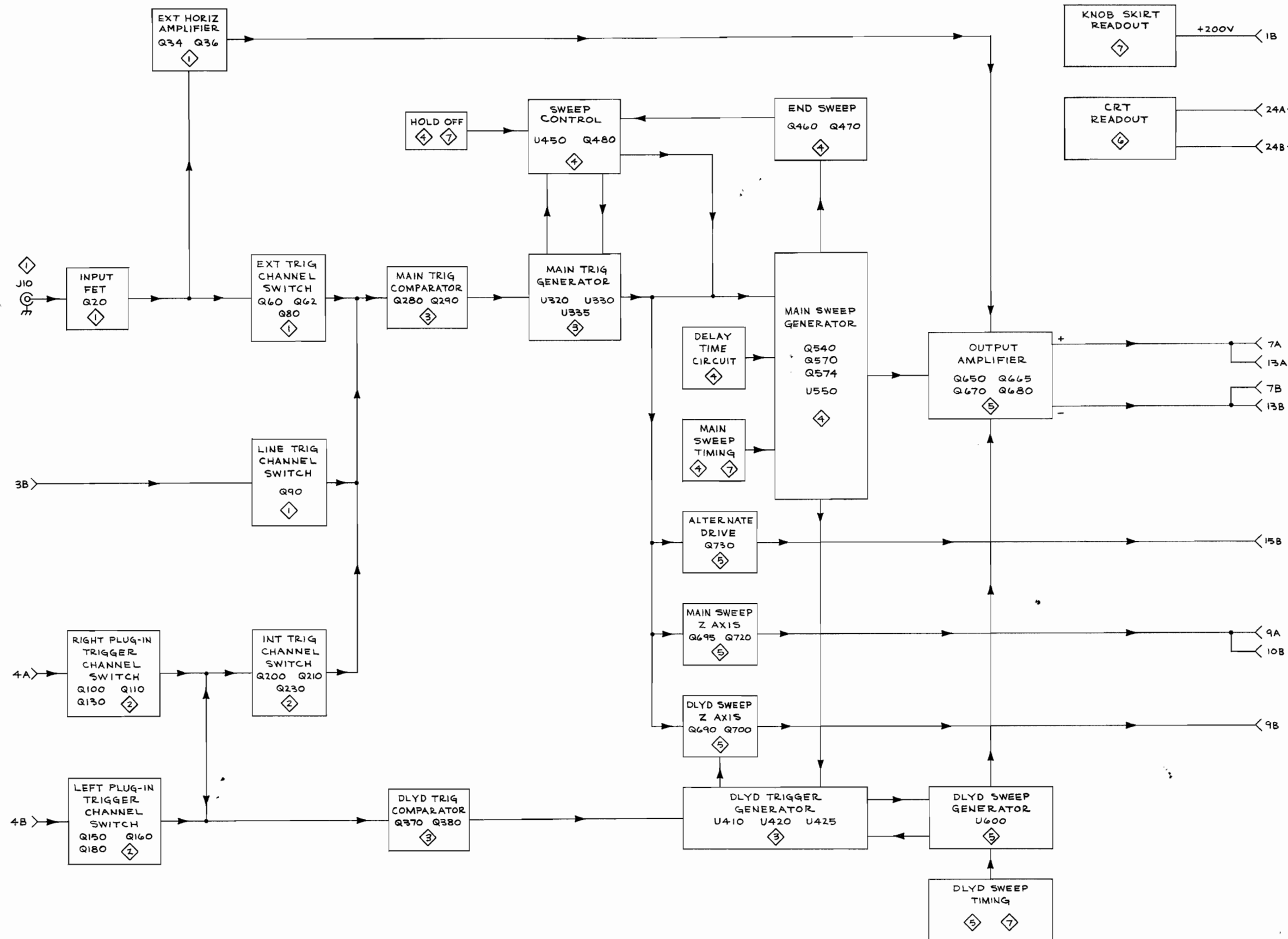
CKT NO	GRID LOC
LR60	L-5
LR67	K-5
LR73	J-6
LR293	J-3
LR299	J-2
LR330	I-1
LR335	G-1
LR445	B-5
Q20	H-3
Q24	G-3
Q34	F-3
Q36	F-4
Q60	K-5
Q62	K-5
Q80	J-6
Q90	A-6
Q230	H-5
Q280	K-3
Q290	K-2
Q460	E-5
Q470	E-4
Q480	G-3
Q540	F-5
Q570	F-5
Q574	G-5
R10	I-4
R11	I-4
R15	H-4
R16	I-3
R20	H-3
R21	H-4
R25	G-3
R26	G-3
R30	I-4
R36	F-4
R38	F-4
R40	F-4
R42	F-4
R45	F-3
R47	D-4
R49	H-4
R50	G-3
R52	E-4
R60	K-5
R62	L-5
R65	L-5
R67	K-6
R69	L-5
R70	K-5
R73	K-6
R80	I-5
R83	I-5
R85	K-5
R87	I-6
R90	B-6
R93	I-5
R95	I-5
R97	I-6
R228	H-5
R230	H-6
R235	H-6
R236	G-6
R237	B-5
R280	J-3
R282	J-3
R285	K-2
R287	K-2
R290	K-2

CKT NO	GRID LOC
R293	K-1
R298	K-2
R299	J-2
R310	K-1
R312	K-2
R314	J-1
R325	I-2
R326	I-2
R328	I-2
R329	I-2
R332	H-2
R334	F-1
R336	F-2
R337	G-2
R339	F-2
R342	H-2
R345	H-2
R347	H-2
R350	H-2
R354	G-2
R356	G-3
R357	G-3
R450	D-5
R451	K-4
R452	D-5
R455	D-5
R460	D-5
R464	D-5
R465	D-5
R468	D-5
R470	D-5
R472	E-5
R473	E-4
R475	D-4
R476	D-4
R480	E-5
R482	B-5
R483	D-6
R484	B-4
R489	E-5
R490	B-5
R495	B-5
R500	F-1
R503	F-1
R536	F-5
R540	F-4
R542	E-5
R543	E-5
R545	E-5
R547	E-5
R549	G-2
R550	F-5
R551	B-3
R552	A-4
R556	C-4
R557	D-4
R559	D-4
R560	D-3
R562	C-4
R564	D-4
R566	D-4
R567	C-4
R569	D-4
R570	G-5
R573	F-5
R574	F-6
R900	A-2
R901	A-1
R903	B-1
R905	A-1
R907	B-1

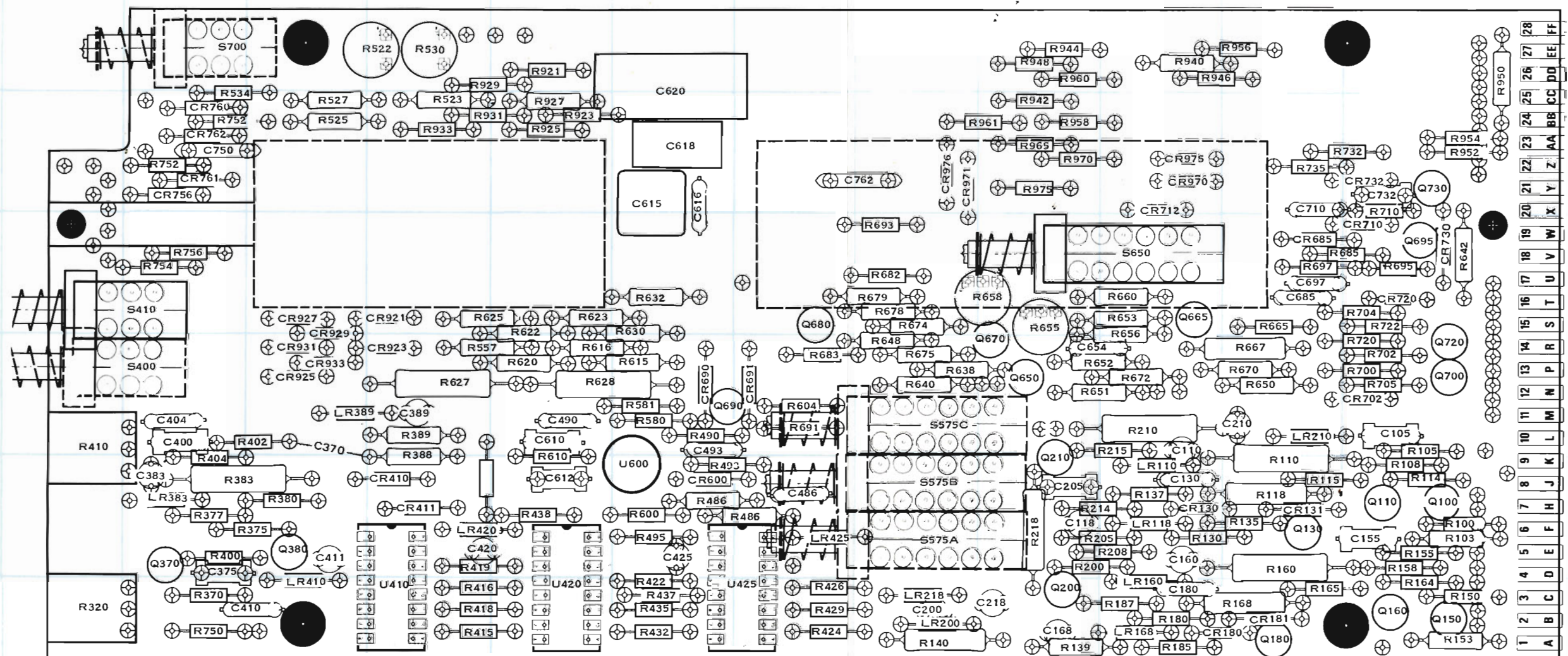
CKT NO	GRID LOC
R909	B-2
R911	A-2
R913	B-2
S10A	K-3
S10B	K-3
S10C	K-2
S60A	J-5
S60B	J-5
J60C	J-4
S60D	J-4
S95	I-3
S320A	G-4
S320B	G-4
S320C	G-5
S550	F-3
U320	I-2
U330	H-2
U335	G-2
U450	C-5
U550	F-5
VR30	I-4
VR42	E-4
VR490	B-5

CONTROLS AND CONNECTORS



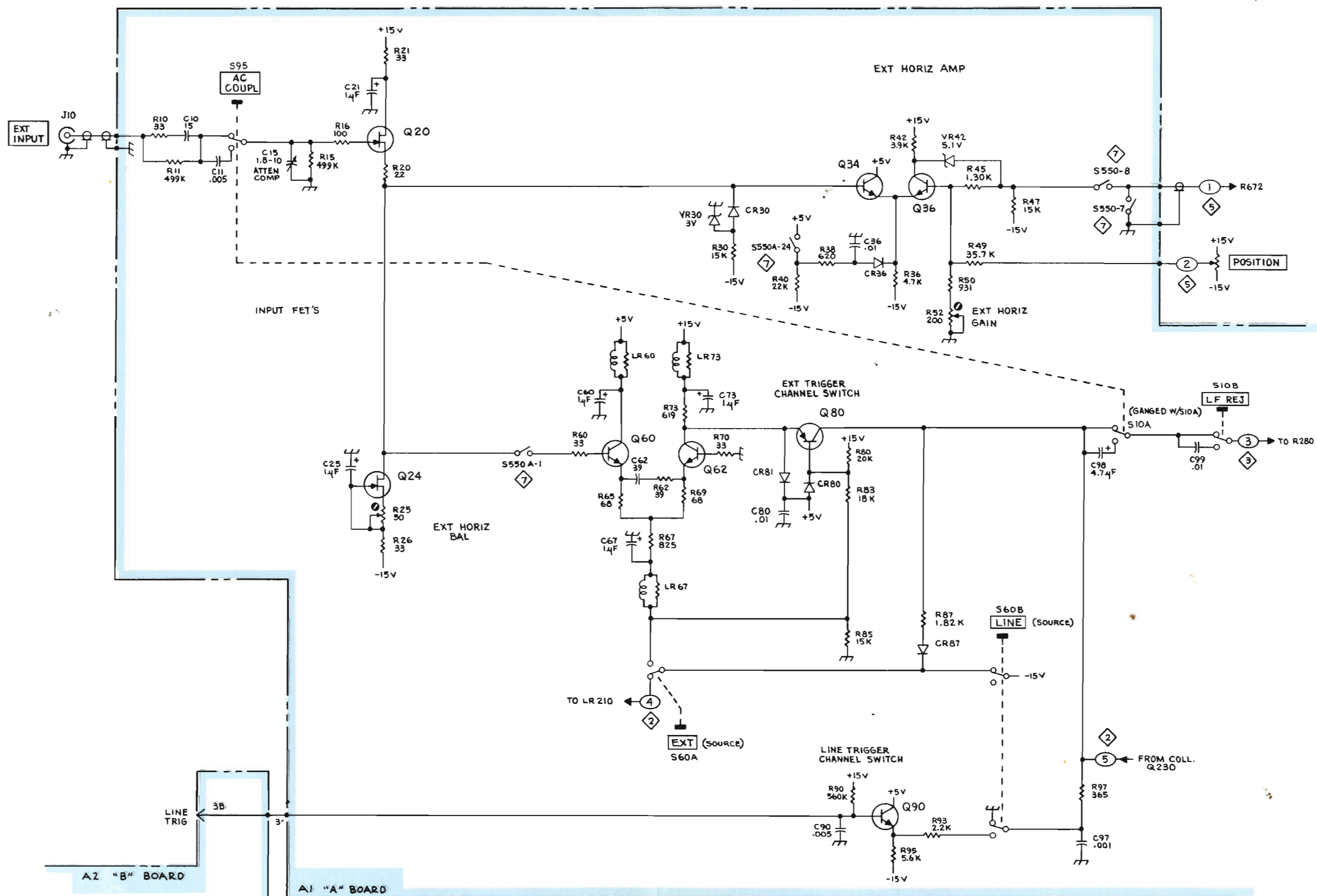


PARTS LOCATION GRID

PARTS LOCATION GRID B
BOARD

COMPONENTS SHOWN WITH DASHED LINES ARE LOCATED ON BACK SIDE OF BOARD.

REV. JAN 1974 (A)



5B42

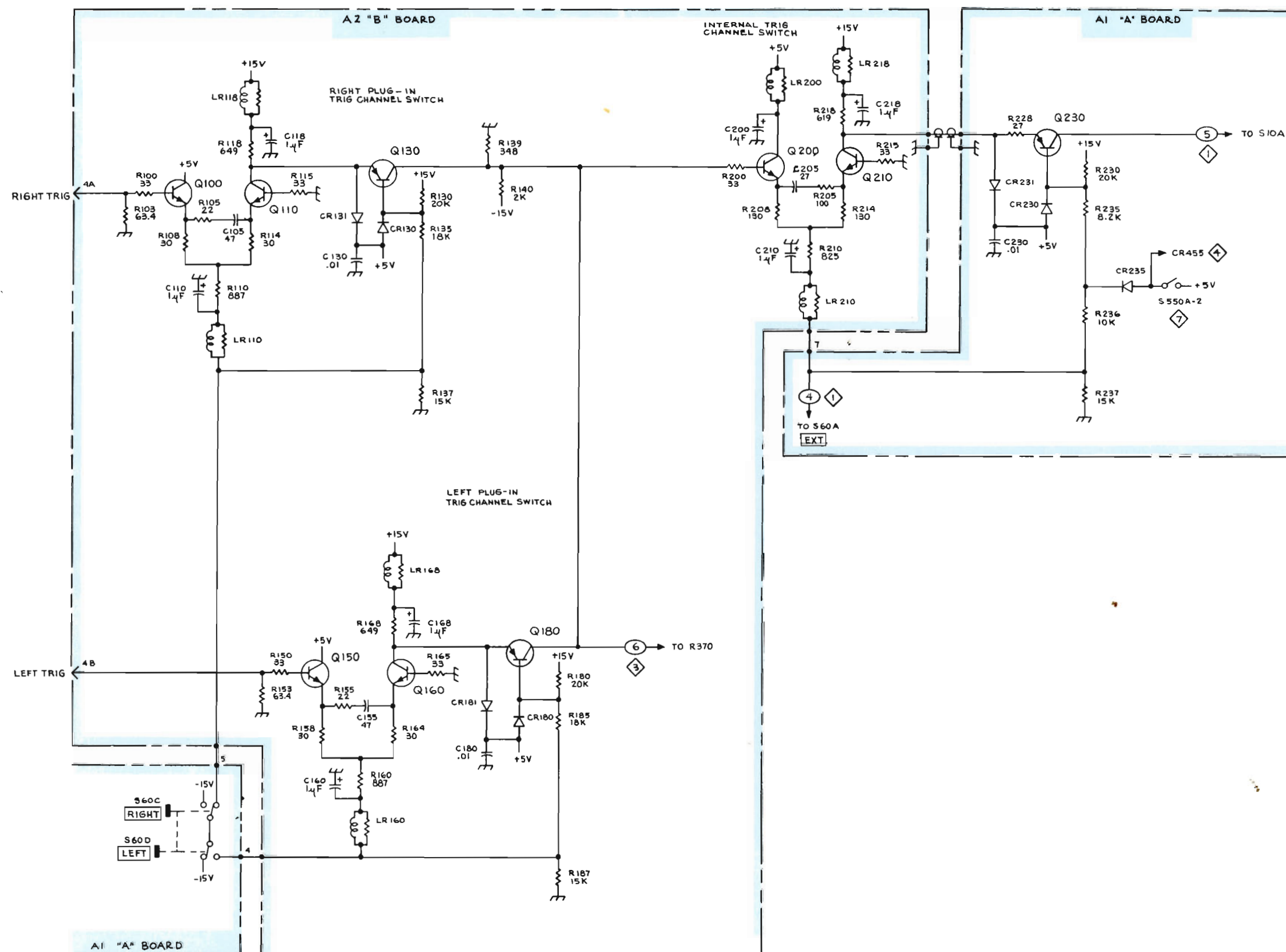
(A)

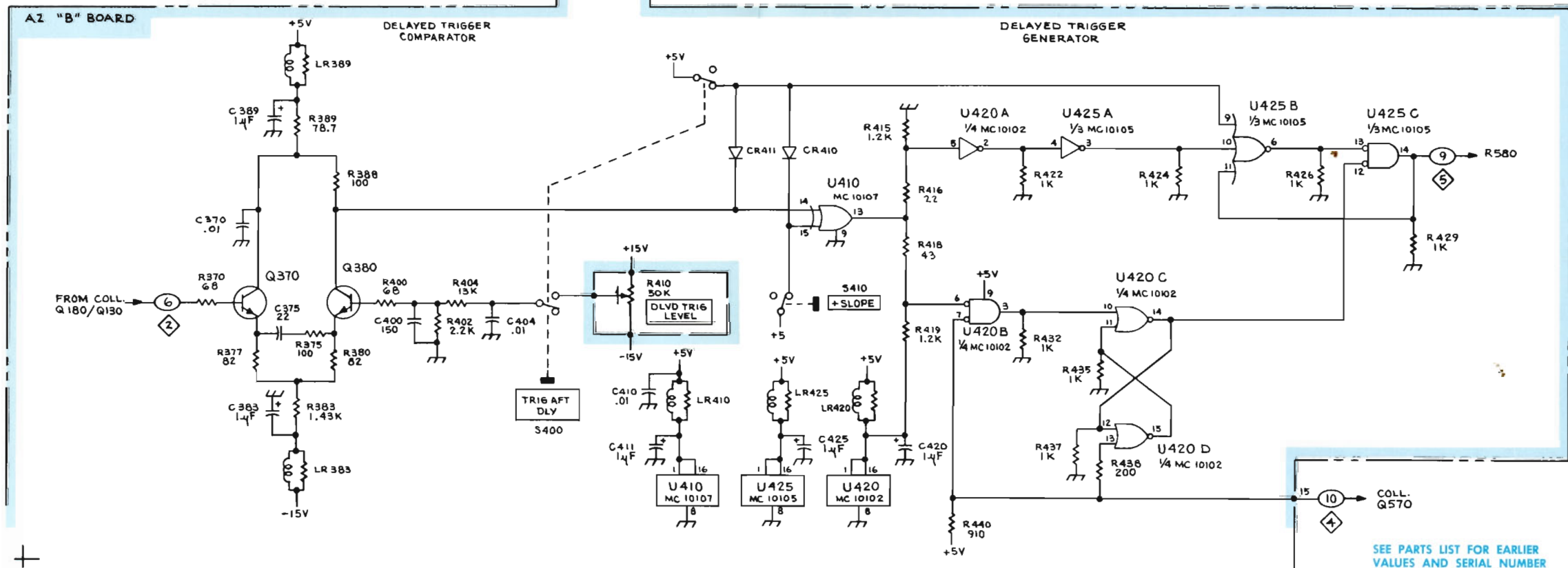
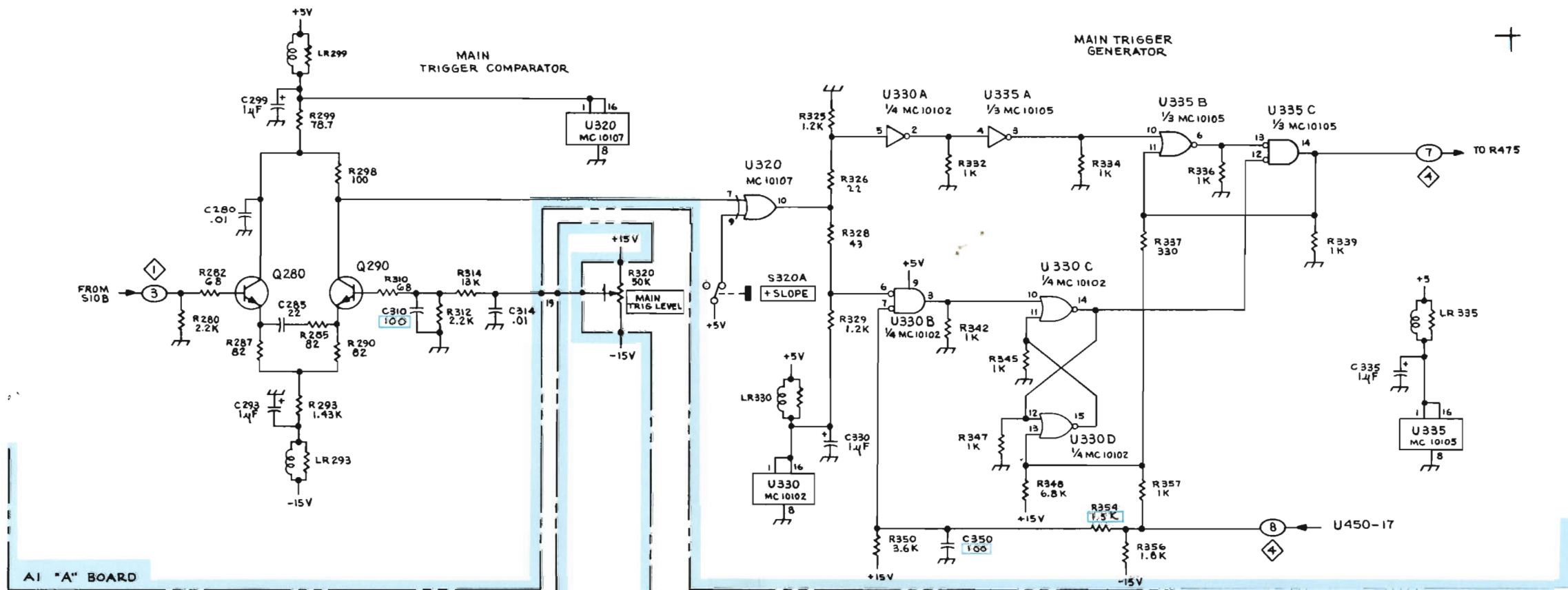
EXTERNAL TRIGGER CHANNEL SWITCHING 1

BYZ
REV. JAN. 1974

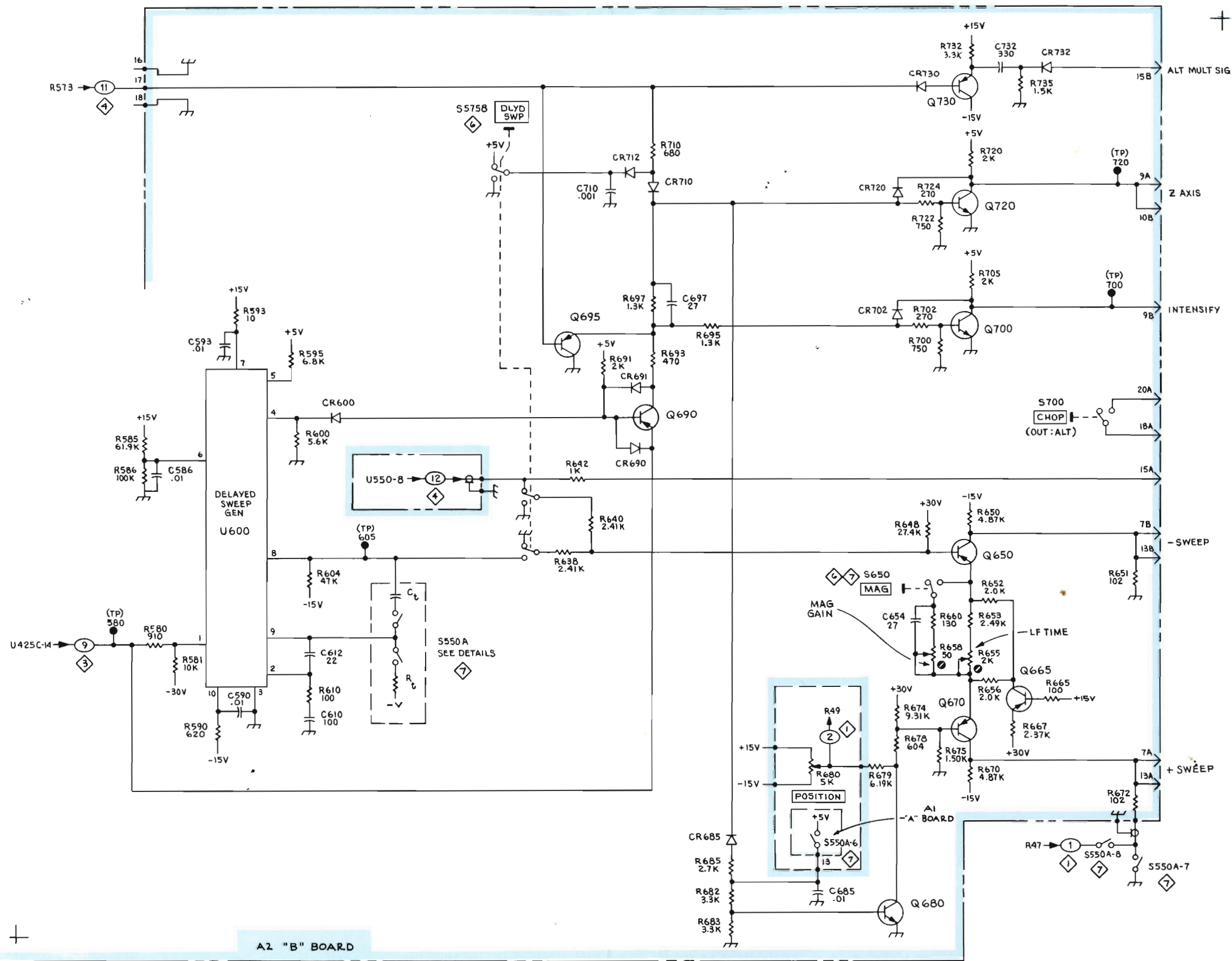
EXTERNAL TRIGGER
CHANNEL SWITCHING

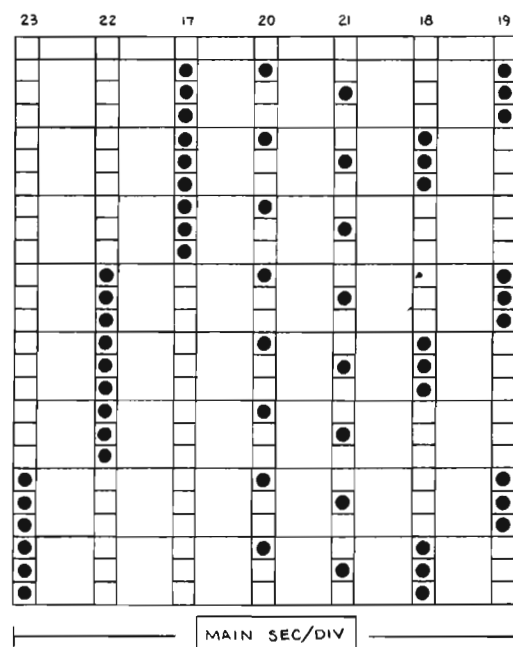
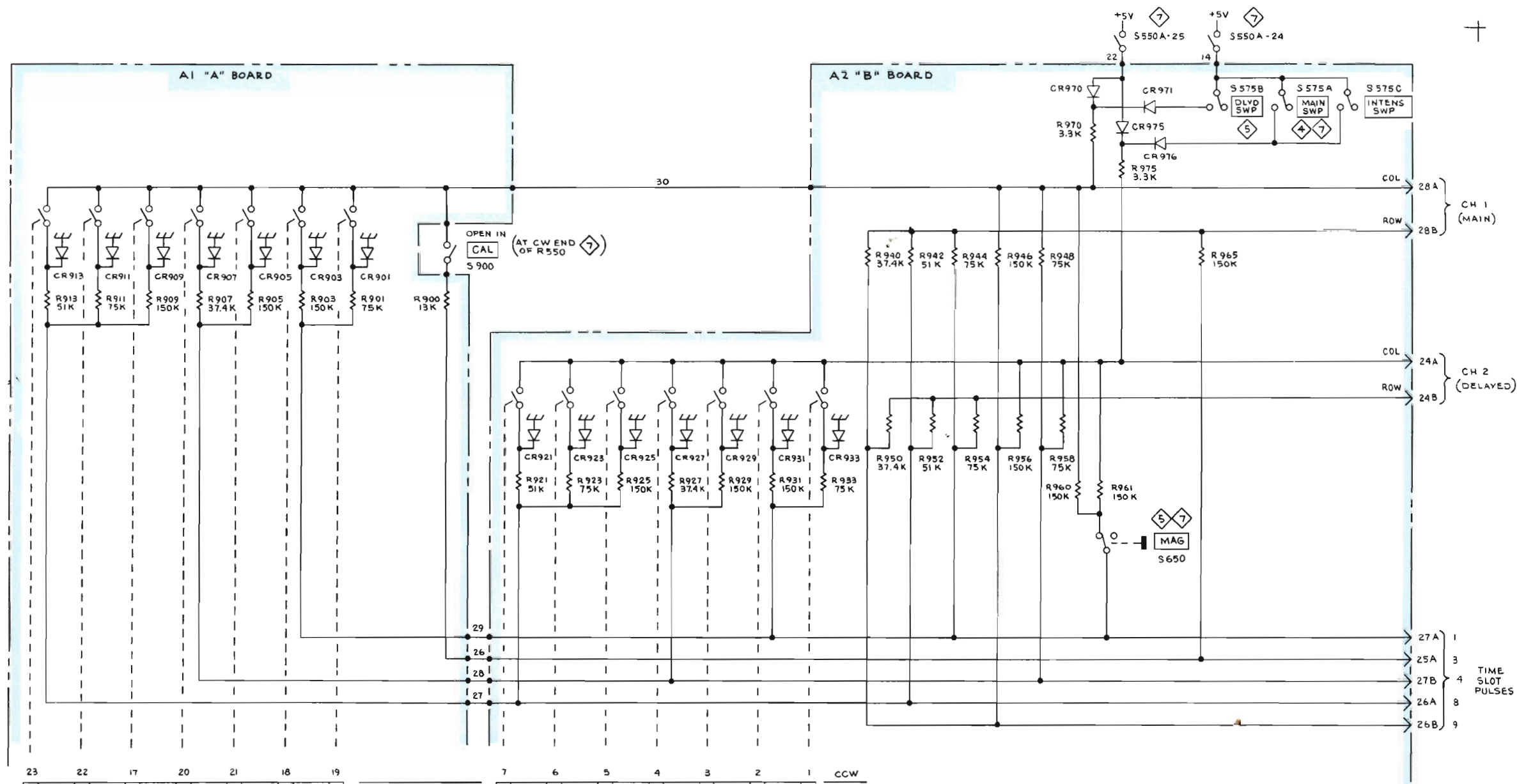
1





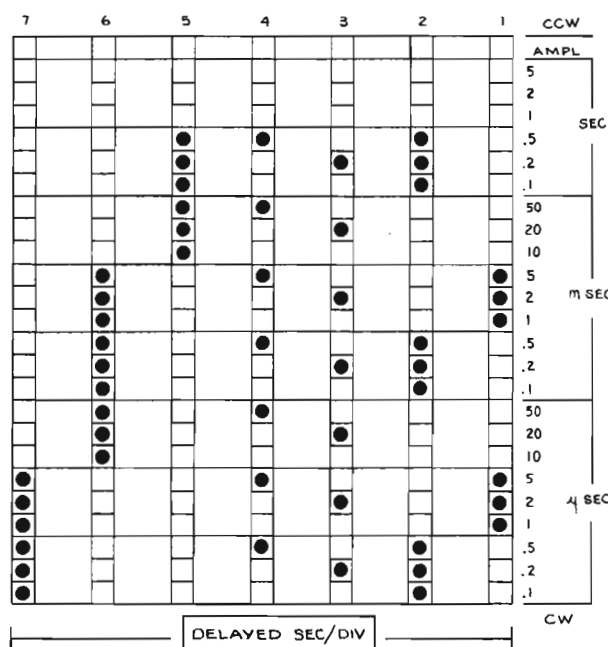
SEE PARTS LIST FOR EARLIER
VALUES AND SERIAL NUMBER
RANGES OF PARTS MARKED
WITH BLUE OUTLINE.





5B42

S550A

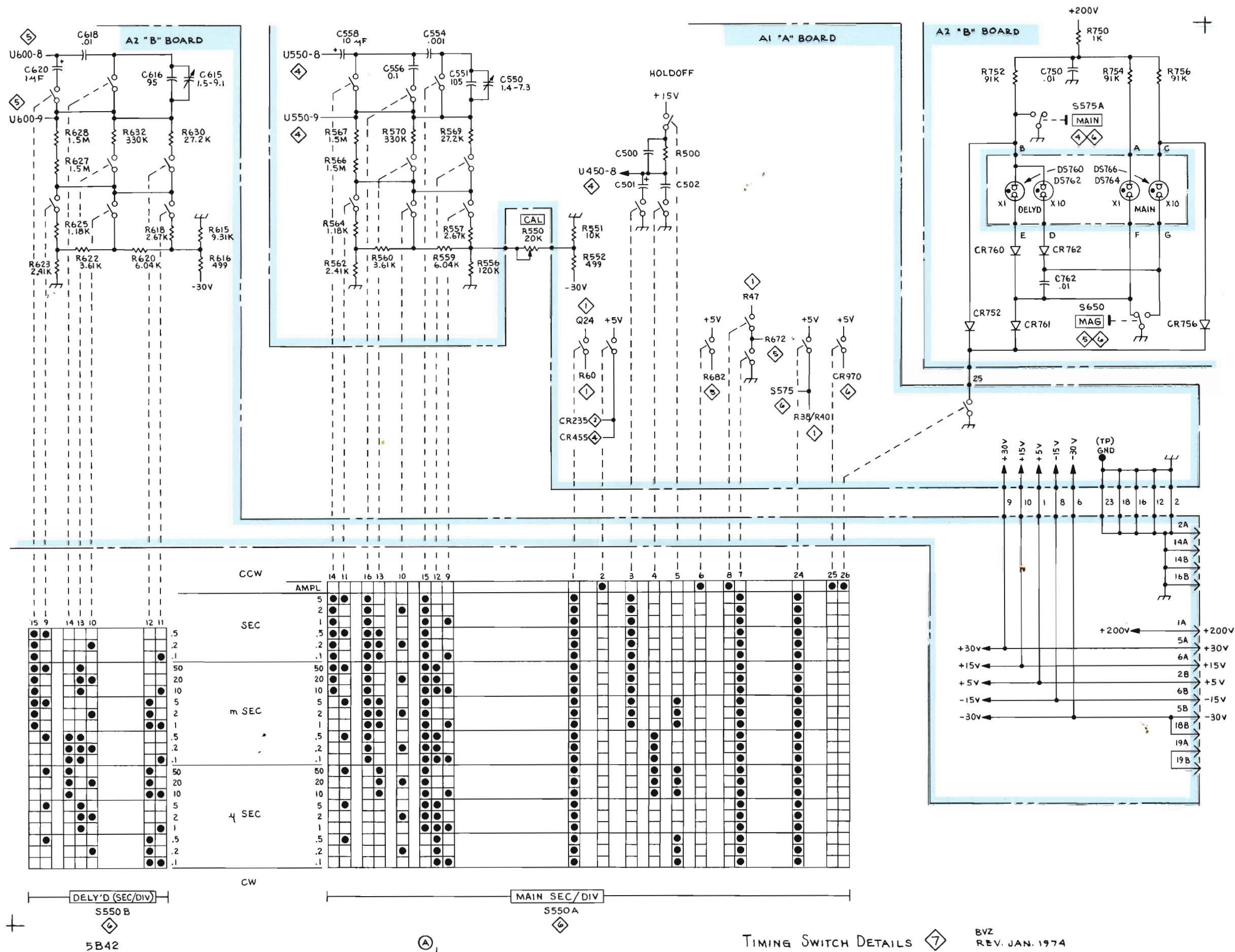


S550B
REV. B, NOV. 1974

READOUT SWITCHING

6

BVZ
0173



MECHANICAL PARTS LIST

Replacement parts should be ordered from the Tektronix Field Office or Representative in your area. Changes to Tektronix products give you the benefit of improved circuits and components. Please include the instrument type number and serial number with each order for parts or service.

ABBREVIATIONS

BHB	binding head brass	h	height or high	OHB	oval head brass
BHS	binding head steel	hex.	hexagonal	OHS	oval head steel
CRT	cathode-ray tube	HHB	hex head brass	PHB	pan head brass
csk	countersunk	HHS	hex head steel	PHS	pan head steel
DE	double end	HSB	hex socket brass	RHS	round head steel
FHB	flat head brass	HSS	hex socket steel	SE	single end
FHS	flat head steel	ID	inside diameter	THB	truss head brass
Fil HB	fillister head brass	lg	length or long	THS	truss head steel
Fil HS	fillister head steel	OD	outside diameter	w	wide or width

Fig. & Index No.	Tektronix Part No.	Serial/Model No.		Q † y	1	2	3	4	5	Description
		Eff	Disc							
1-1	337-1399-00			2						SHIELD, electrical, side
-2	366-0494-00			2						KNOB, dark gray--POSITION & DELAYED TRIG LEVEL
	- - - - -			-						each knob includes:
	213-0153-00			1						SETSCREW, 5-40 x 0.125 inch, HSS
-3	366-1125-00			1						KNOB, light gray--MAIN TRIG LEVEL
	- - - - -			-						knob includes:
	213-0153-00			1						SETSCREW, 5-40 x 0.125 inch, HSS
-4	366-1346-01			1						KNOB, red--CAL
	- - - - -			-						knob includes:
	213-0153-00			1						SETSCREW, 5-40 x 0.125 inch, HSS
-5	366-1456-00			1						KNOB, light gray--MAIN SEC/DIV
	- - - - -			-						knob includes:
	213-0153-00			2						SETSCREW, 5-40 x 0.125 inch, HSS
-6	358-0414-00			1						BUSHING, sleeve, 0.20 inch long
-7	366-1455-00			1						KNOB, dark gray--DELAYED
	- - - - -			-						knob includes:
	213-0153-00			2						SETSCREW, 5-40 x 0.125 inch, HSS
-8	366-1286-02			1						KNOB, latch
										(ATTACHING PARTS)
-9	214-1840-00			1						PIN, knob securing
										- - - * - - -
-10	366-1257-26			1						PUSHBUTTON--AUTO TRIG
-11	366-1402-75			1						PUSHBUTTON--LF REJ
-12	366-1257-27			1						PUSHBUTTON--AC COUPL
-13	366-1257-28			1						PUSHBUTTON-- + SLOPE
-14	366-1257-29			1						PUSHBUTTON--SINGL SWP
-15	366-1257-30			1						PUSHBUTTON--RESET
-16	366-1257-57			1						PUSHBUTTON--LEFT
-17	366-1257-58			1						PUSHBUTTON--RIGHT
-18	366-1257-23			1						PUSHBUTTON--LINE
-19	366-1257-24			1						PUSHBUTTON--EXT
-20	366-1328-26			1						PUSHBUTTON--TRIG AFTER DLY (dark gray)
-21	366-1402-80			1						PUSHBUTTON--DLY'D SWP
-22	366-1402-79			1						PUSHBUTTON--INTENS SWP

Mechanical Parts List-5B42

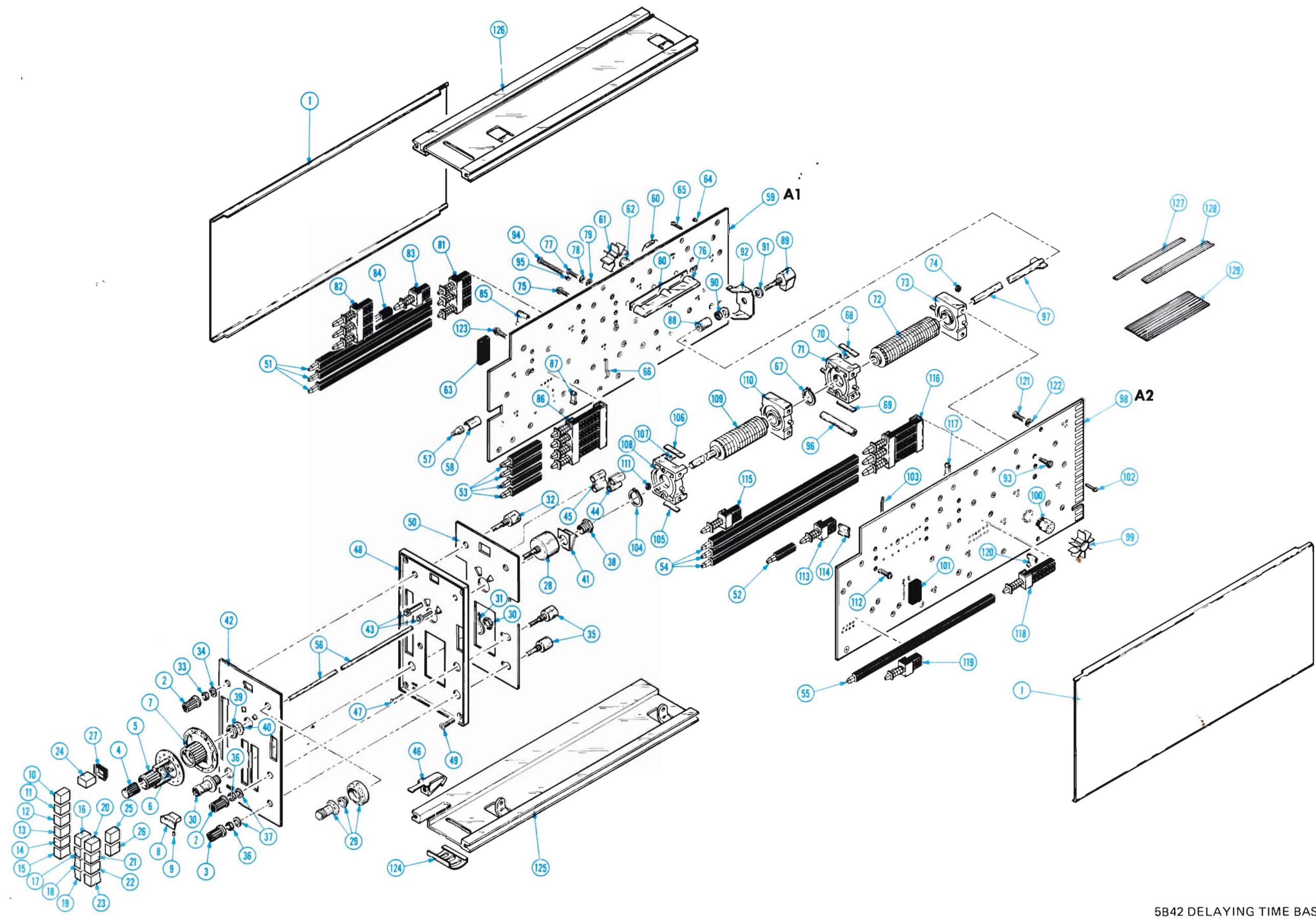
Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff Disc	Q t y						Description
				1	2	3	4	5	
1-23	366-1402-65		1						PUSHBUTTON--MAIN SWP
-24	366-1257-31		1						PUSHBUTTON--CHOP
-25	366-1257-25		1						PUSHBUTTON--SWP MAG
-26	366-1328-22		1						PUSHBUTTON-- + SLOPE (dark gray)
-27	426-0681-00		17						FRAME, pushbutton
-28	- - - - -		1						RESISTOR, variable (See R520 Electrical List) (ATTACHING PARTS)
-29	331-0247-00		1						DIAL, control, turns counting - - - * - - -
-30	131-0955-00		1						CONNECTOR, receptacle, electrical, BNC, w/hardware (ATTACHING PARTS)
-31	210-0255-00		1						TERMINAL, lug, 0.391 inch ID, SE - - - * - - -
-32	- - - - -		1						RESISTOR, variable (See R680 Electrical List) (ATTACHING PARTS)
-33	210-0583-00		1						NUT, hex., 0.25-32 x 0.312 inch
-34	210-0940-00		1						WASHER, flat, 0.25 ID x 0.375 inch OD - - - * - - -
-35	- - - - -		2						RESISTOR, variable (See R320 & R410 Electrical List) (ATTACHING PARTS FOR EACH)
-36	210-0583-00		1						NUT, hex., 0.25-32 x 0.312 inch
-37	210-0940-00		1						WASHER, flat, 0.25 ID x 0.375 inch OD - - - * - - -
-38	358-0029-00		1						BUSHING, 0.375-32 x 0.50 inch long (ATTACHING PARTS)
-39	210-0590-00		1						NUT, hex., 0.375-32 x 0.438 inch
-40	210-0978-00		1						WASHER, flat, 0.375 ID x 0.50 inch OD
-41	344-0195-01		1						CLIP, grounding - - - * - - -
-42	333-1665-00		1						PANEL, front
-43	378-0729-00		4						LENS, light indicating
-44	200-1482-00		1						COVER, lamp (right)
-45	200-1483-00		1						COVER, lamp (left)
-46	214-1513-01		1						LATCH, plug-in securing (ATTACHING PARTS)
-47	213-0254-00		1						SCREW, thread forming, 2-56 x 0.25 inch 100 deg. csk, FHS - - - * - - -
-48	386-2354-00		1						SUBPANEL, front (ATTACHING PARTS)
-49	213-0229-00		4						SCREW, thread forming, 6-32 x 0.375 inch, 100 deg. csk, FHS - - - * - - -
-50	337-1701-00		1						SHIELD, electrical, rear
-51	384-1101-00		3						SHAFT, extension, 4.15 inches long
-52	384-1136-00		1						SHAFT, extension, 0.95 inch long
-53	384-1099-00		4						SHAFT, extension, 1.54 inches long
-54	384-1129-00		3						SHAFT, extension, 5.607 inches long

Fig. & Index No.	Tektronix Part No.	Serial/Model No.		Q † y	1	2	3	4	5	Description
		Eff	Disc							
1-55	384-1059-00			1						SHAFT, extension, 6.58 inches long
-56	384-1116-00			1						SHAFT, extension, 10.125 inches long
-57	378-0541-00			1						LENS, frosted, 0.383 inch long
-58	162-0055-00			in						SLEEVING, 0.5 inch long
-59	- - - - -			1						CIRCUIT BOARD ASSEMBLY--A (See A1 Electrical List)
	- - - - -			-						circuit board assembly includes:
-60	131-0566-00			5						LINK, terminal connecting
-61	214-1292-00			1						HEATSINK, transistor
-62	136-0241-00			1						SOCKET, integrated circuit, 10 pin
-63	136-0260-02			3						SOCKET, integrated circuit, 16 pin
-64	136-0252-04			20						SOCKET, pin connector, single
-65	214-0579-00			5						TERMINAL, pin, test point
-66	131-0604-00 ¹			26						CONTACT, electrical, cam switch
	263-1023-00			1						ACTUATOR ASSEMBLY
	- - - - -			-						actuator assembly includes:
-67	354-0391-00			1						RING, retaining
-68	214-1139-02			1						SPRING, flat, 0.008 inch thick (red)
-69	214-1139-03			1						SPRING, flat, 0.010 inch thick (green)
-70	214-1127-00			2						ROLLER, detent
-71	401-0081-02			1						BEARING, front
-72	105-0407-00			1						ACTUATOR, drum
-73	401-0146-00			1						BEARING, rear
-74	210-0406-00			8						NUT, hex., 4-40 x 0.188 inch (ATTACHING PARTS)
-75	211-0116-00			4						SCREW, sems, 4-40 x 0.312 inch, PHB - - - * - - -
-76	337-1418-01			1						SHIELD, electrical, cam switch (ATTACHING PARTS)
-77	213-0277-00			3						SCREW, thread forming, 2-56 x 0.312 inch, PHS
-78	210-0001-00			3						WASHER, lock, 0.092 ID x 0.180 inch OD
-79	210-1008-00			3						WASHER, flat, 0.090 ID x 0.188 inch OD
-80	342-0167-00			1						INSULATOR, circuit board * - - - * - - -
-81	260-1487-00			1						SWITCH, push, S230A,B,C
-82	260-1448-00			1						SWITCH, push, S10A,B,C
-83	260-1554-00			1						SWITCH, push, S95
-84	384-1136-00			1						SHAFT, extension, 0.95 inch long
-85	361-0382-00			10						SPACER, switch (brown)
-86	260-1556-00			1						SWITCH, push, S60A,B,C,D
-87	361-0384-00			8						SPACER, switch (red)
-88	376-0039-00	B010100	B010389	1						COUPLER, shaft
	376-0050-00	B010390		1						COUPLER, shaft, flex
	- - - - -			-						coupler includes:
	213-0075-00	B010100	B010389	2						SETSCREW, 4-40 x 0.094 inch, HSS
	213-0022-00	B010390		4						SETSCREW, 4-40 x 0.188 inch, HSS
-89	- - - - -			1						RESISTOR, variable (See R550/S900 Electrical List) (ATTACHING PARTS)
-90	210-0583-00			1						NUT, hex., 0.25-32 x 0.312 inch
-91	210-0940-00			2						WASHER, flat, 0.25 ID x 0.375 inch OD
-92	407-0803-00			1						BRACKET, component - - - * - - - (ATTACHING PARTS)
-93	211-0116-00			4						SCREW, sems, 4-40 x 0.312 inch, PHB
-94	213-0336-00			1						SCREW, 6-32 x 1.5 inches long, PHS
-95	210-0801-01			1						WASHER, flat, 0.140 ID x 0.281 inch OD
-96	361-0516-00			1						SPACER, sleeve, 0.986 inch long

¹For repair information-SEE SERVICE SECTION OF 5403 MANUAL.

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff Disc	Q † y						Description
				1	2	3	4	5	
1-97	384-0883-00		1						SHAFT, extension, 9.85 inches long w/driver
-98	- - - - -		1						CIRCUIT BOARD ASSEMBLY--B (See A2 Electrical List)
	- - - - -		-						circuit board assembly includes:
-99	214-1292-00		1						HEATSINK, transistor
-100	136-0241-Q0		1						SOCKET, integrated circuit, 10 pin
-101	136-0260-02		3						SOCKET, integrated circuit, 16 pin
-102	214-0579-00		4						TERMINAL, pin, test point
-103	131-0604-00 ¹		14						CONTACT, electrical, cam switch
	263-1022-00		1						ACTUATOR ASSEMBLY
	- - - - -		-						actuator assembly includes:
-104	354-0391-00		1						RING, retaining
-105	214-1139-02		1						SPRING, flat, 0.008 inch thick (red)
-106	214-1139-03		1						SPRING, flat, 0.010 inch thick (green)
-107	214-1127-00		2						ROLLER, detent
-108	401-0081-02		1						BEARING, front
-109	105-0408-00		1						ACTUATOR, drum
-110	401-0146-00		1						BEARING, rear
-111	210-0406-00		8						NUT, hex., 4-40 x 0.188 inch (ATTACHING PARTS)
-112	211-0116-00		4						SCREW, sems, 4-40 x 0.312 inch, PHB - - - * - - -
-113	260-1211-00		1						SWITCH, push, S700
-114	361-0383-00		2						SPACER, switch (charcoal)
-115	260-1445-00		1						SWITCH, push, S400
-116	260-1555-00		1						SWITCH, push, S575A,B,C
-117	361-0384-00		6						SPACER, switch (red)
-118	260-1209-00		1						SWITCH, push, S650
-119	260-1208-00		1						SWITCH, push, S410
-120	361-0382-00		4						SPACER, switch (brown) (ATTACHING PARTS)
-121	213-0146-00		3						SCREW, thread forming, 6-20 x 0.312 inch, PHS
-122	210-0801-01	E010100 B010200X	3						WASHER, flat, 0.140 ID x 0.281 inch OD
-123	211-0116-00		4						SCREW, sems, 4-40 x 0.312 inch, PHB - - - * - - -
-124	131-1372-00		2						CONTACT, electrical, plug-in ground
-125	426-0724-02		1						FRAME SECTION, bottom
-126	426-0725-03		1						FRAME SECTION, top
-127	175-0826-00		ft						WIRE, electrical, 3 wire ribbon, 0.4 feet long
-128	175-0827-00		ft						WIRE, electrical, 4 wire ribbon, 0.3 feet long
-129	175-1405-00		3						CABLE, flat, 10 conductor, 2 inches long

¹For repair information-SEE SERVICE SECTION OF 5403 MANUAL.



5B42 DELAYING TIME BASE

FIG. 2 ACCESSORIES &
REPACKAGING

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ACCESSORIES

Fig. & Index No.	Tektronix Part No.	Serial/Model No.		Q t y						Description
		Eff	Disc		1	2	3	4	5	
2-	070-1447-00			1	MANUAL, instruction (not shown)					

REPACKAGING

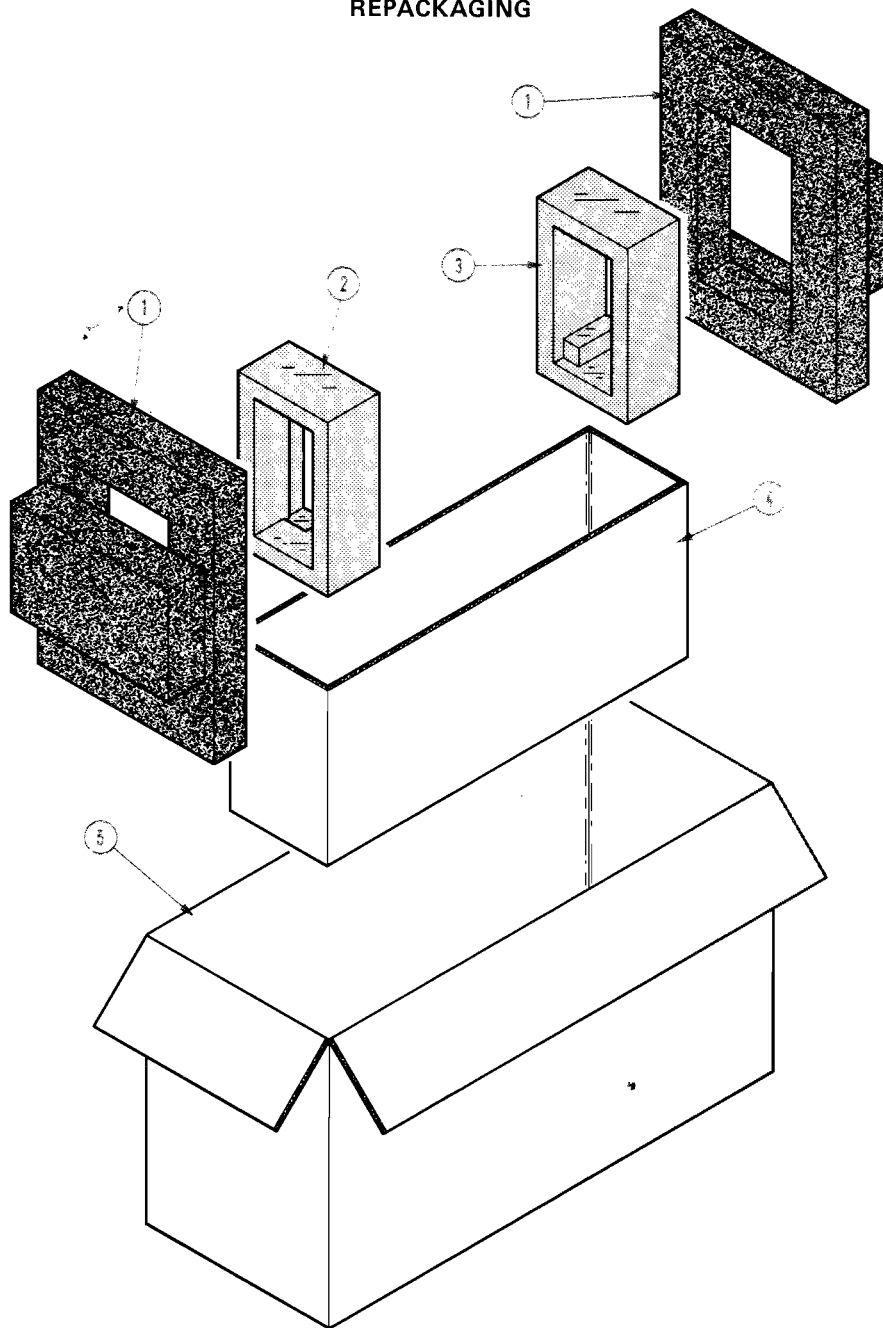


Fig. & Index No.	Tektronix Part No.	Serial/Model No.		Q t y						Description
		Eff	Disc		1	2	3	4	5	
2-	065-0151-00			1	CARTON ASSEMBLY					carton assembly includes:
	-----			-						
-1	004-0282-00			2	FRAME					
-2	004-0243-00			1	END CAP, front					
-3	004-0242-00			1	END CAP, rear					
-4	004-1093-00			1	PAD					
-5	004-0612-00			1	CARTON					

MANUAL CHANGE INFORMATION

At Tektronix, we continually strive to keep up with latest electronic developments by adding circuit and component improvements to our instruments as soon as they are developed and tested.

Sometimes, due to printing and shipping requirements, we can't get these changes immediately into printed manuals. Hence, your manual may contain new change information on following pages.

A single change may affect several sections. Sections of the manual are often printed at different times, so some of the information on the change pages may already be in your manual. Since the change information sheets are carried in the manual until ALL changes are permanently entered, some duplication may occur. If no such change pages appear in this section, your manual is correct as printed.

GUERNSEY TYPE 5B42 - TENTATIVE SN 100151

ELECTRICAL PARTS LIST CHANGE

CHANGE TO -

VR490 , 153-0059-00

1N751A (selected)

M2702/774

GUERNSEY TYPE 5B42 - TENTATIVE SN 100151

ELECTRICAL PARTS LIST CHANGE

CHANGE TO -

CR732 152-0075-00 Germanium.

M2800/1174

GUERNSEY TYPE 5B42 - TENTATIVE SN 100221

ELECTRICAL PARTS LIST AND SCHEMATIC CORRECTION

CHANGE TO -

R140 , 322-0229-00

2.37 k ohm, 1 %, 0.25W

M2756/974

GUERNSEY TYPE 5B42 - TENTATIVE S/N 100241

ELECTRICAL PARTS LIST CHANGE

CHANGE TO -

CR752	152-0107-01	T 160 or 1N647
CR756	152-0107-01	T 160 or 1N647
CR760	152-0107-01	T 160 or 1N647
CR761	152-0107-01	T 160 or 1N647
CR762	152-0107-01	T 160 or 1N647

M2804/1174

GUERNSEY TYPE 5B42 - TENTATIVE S/N 100341

ELECTRICAL PARTS LIST CHANGE

CHANGE TO -

R482 315-0511-00

Res. 510 Ω , 5%, $\frac{1}{4}$ W.

M2916/575

